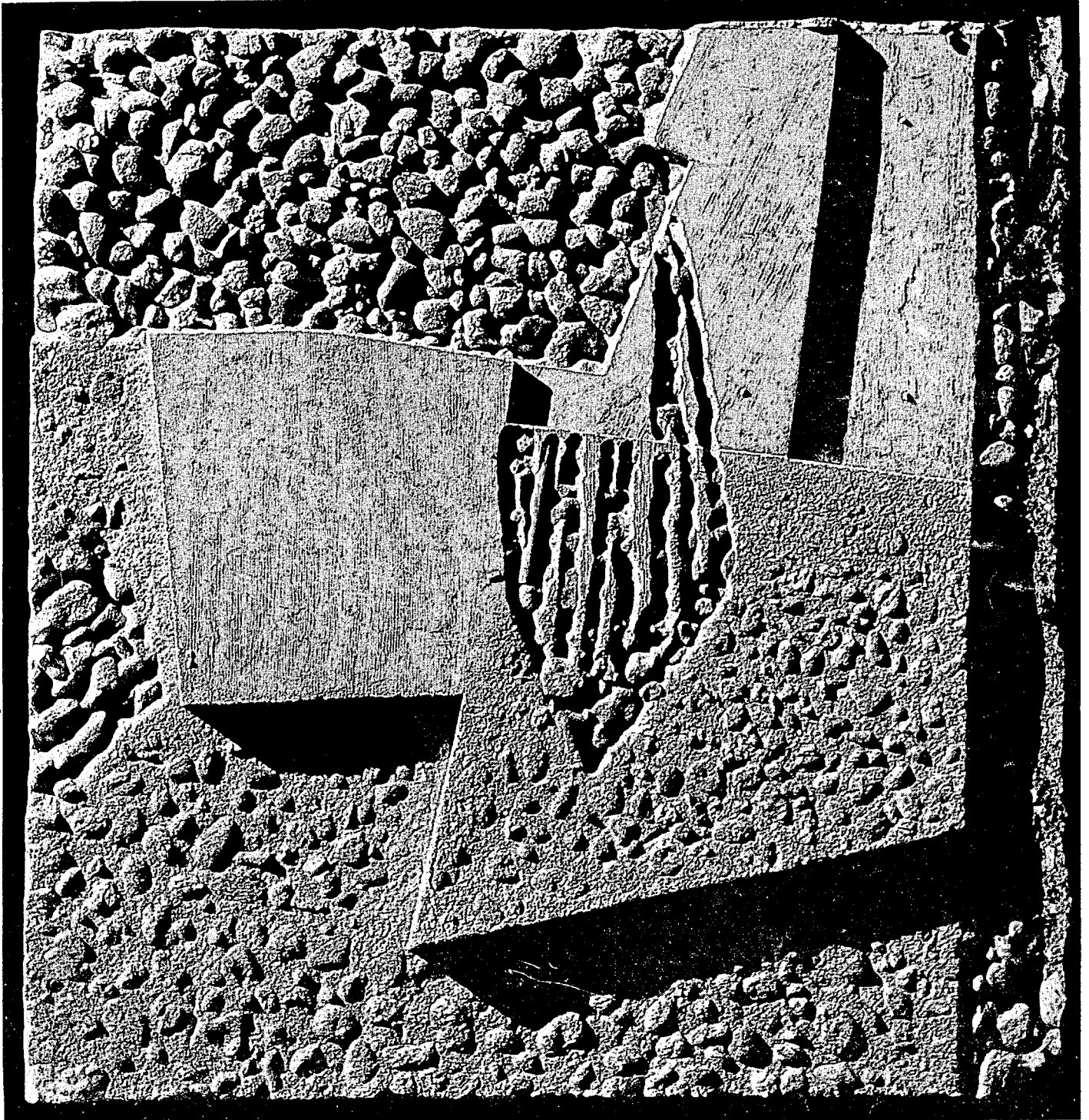




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November 1965



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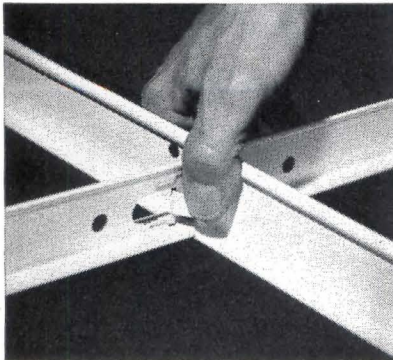
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Marilyn S. Housell

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Cover: Naturbetong sculpture in Oslo, Norway, by Carl Nesjar, created by the forming and abrasive blasting of concrete (p. 51)

LOOKING AHEAD TO DECEMBER

Frederick Law Olmsted— Environmental Design Pioneer

The man behind New York's Central Park, author and humanitarian, was foremost the "prophet" of environmental design in America. "His work and philosophy offer a message of hope and inspiration to all who play a role in creating our future environment," says William H. Tishler, assistant professor of landscape architecture at the University of Wisconsin.

The Virile Roots: 19th Century American Experimentation

Innovations with the basketry of the skeleton in both wood and steel are followed by the manipulation of continuous, plastic space. Julian Eugene Kulski, professor of urban planning and architecture at the George Washington University, writes: "The two separate streams (structure and space) emerging from the 19th century American development have finally in the mid-20th century merged into a bountiful river of architectural expression."

The Architect, Package Dealer and How Big Business Builds

Here's another in the two-article series—one addressed to the profession and the other to the clients—produced by the AIA Committee on Industrial Architecture. The architect piece reports the Committee's study of industry's facilities acquisition methods, while the second suggests that leading corporations seem to regard the use of an independent practitioner as the best deal. A "clear and encouraging shift" is reported.

PHOTO CREDITS: Lucien Hervé, from "Le Corbusier," George Braziller, Inc., publisher—p. 32, 33; H. Armstrong Roberts—p. 35 (left); Alexander Georges—p. 35 (right); Amos Rapoport and Henry Sanoff—p. 37, 38, 39, 40 (top two); Morley Baer—p. 40 (bottom two); Tom Burns Jr.—p. 43, 44, 45, 47 (top); Hugh N. Stratford—p. 46; Harry I. Gross—p. 47 (bottom); Abbie Rowe, National Park Service—p. 50; Paul Peters—p. 52, 57 (bottom), 58 (right); Henk Snoek—p. 55; Rondal Partridge—p. 60 (bottom), 61 (bottom right and third from top); Studio One—p. 61 (top); Julius Shulman—p. 62 (top); H. Romanowski—p. 90.

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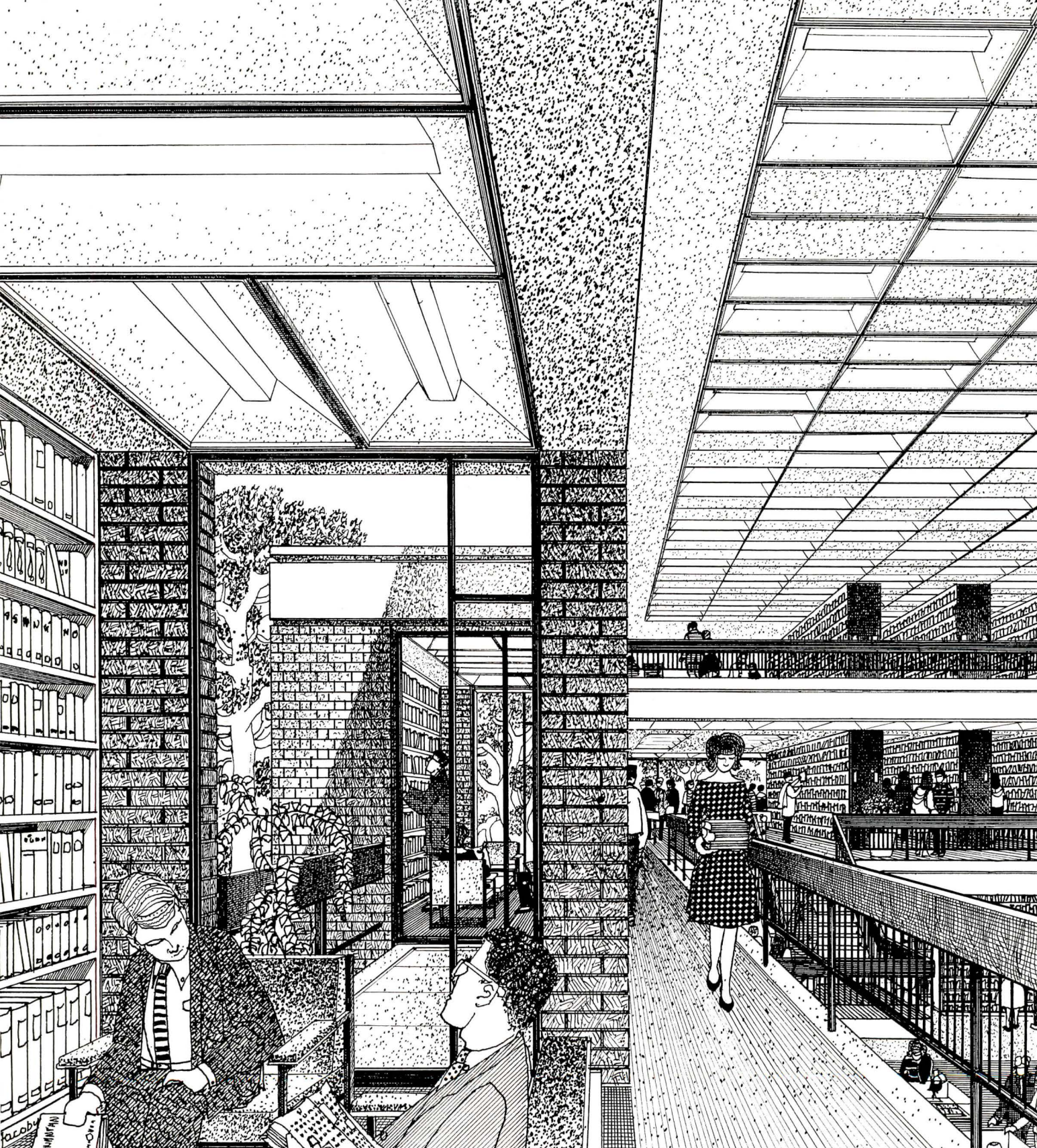
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Architectural Research Comes of Age

THE EVOLUTION of a profession, like that of a biological species, is a brutal process. Those members who are able to adapt to changing conditions will survive; those who cannot or will not are likely to perish.

At the second annual AIA architect-researchers' conference, held last month on the campus of the University of Michigan, it was apparent that architects have chosen to adapt. There was ample and unmistakable evidence that architects have both the ability and the desire to grow with an expanding technology; to use every tool which that technology can provide; to develop their own tools through research; and to interpret and apply knowledge—their own and that of other professionals—to the betterment of the built environment.

The AIA Committee on Research for Architecture, which sponsored the conference, anticipated around 35 participants. One hundred and ten showed up. (At the first A-R conference, held in April 1964 at the Octagon, there were 17.) The enthusiasm and spirit of this year's group left no doubt that architectural research has come into its own.

Reporting on the first conference, the AIA JOURNAL said, "The profession needs a well-coordinated program of research . . . not only in the architectural province, but across disciplinary lines [into] the hard and soft sciences." The program is here, and the lines have been breached. Many more architects are now doing research in, and speaking with authority on, aspects of sociology, psychology, computer technology, chemistry—even space science and medicine. (One conference participant in Ann Arbor saw possible danger in this and warned, "Architects should realize their limitations. We must not absorb a smattering of jargon and then think we know all there is to know about the behavioral sciences.")

Conferees felt that there is still

strong resistance within the profession to the image of the architect as the technocrat of tomorrow's society. Such resistance is particularly evident where technology threatens to crowd into the actual process of design (or where the architect fears it may, as researchers in the field of automated data processing and retrieval have discovered). Opponents of the new technology feel that use of such tools is inimical to "intuitive" design, and can thus strip architecture of its creative aspect.

Researchers felt that the profession must relinquish what one speaker termed "the Renaissance man syndrome." Dean Robert Geddes of Princeton's School of Architecture said pointedly, "Intuition is to be valued; ignorance is not. We must strive to increase the architect's skill by increasing the number of options available to him." Quoting British architect Lord Llewellyn-Davies, Geddes went on, "The Renaissance architect did not need a program; the breadth of his education and experience were such that he could share with his client an understanding of what would be needed."

Unfortunately, a good Renaissance man nowadays is hard to find.

Later speakers also pointed out compelling reasons why architects must improve their competence with whatever appropriate knowledge and tools are available. While many architects are inhibited by pride or fear from learning to use these tools, nonarchitects are neither too proud nor too fearful to do so—nor too bashful to advertise that they can.

Some researchers worry about duplication of effort. "Architects are re-inventing the wheel daily all over the country," one participant complained.

Others do not feel that duplication is a problem. Prof. Theodore Larson of the University of Michigan, discussing an environmental research project involving window-

less vs. conventionally-fenestrated schoolrooms, said, "I am not worried about duplication of effort; we would have been pleased if there had been 9 or 10 similar projects going on simultaneously with ours. This would have provided a much broader sampling and better control."

Even those researchers who see no harm in redundancy stress the need for close communication—otherwise the possible advantages of duplication are lost.

There was less evidence of last year's preoccupation with defining "research for architecture." Henry Elder from the University of British Columbia did suggest that although "research" can be readily defined, "architecture" is the term which virtually defies definition. Generally, though, papers at the Ann Arbor conference were short on theorizing and long on practical application. A feeling of urgency was present.

The sense of urgency was further reinforced on the second morning of the conference, when John Eberhard, director of the National Bureau of Standards' Institute of Applied Technology, warned, "New research and practice tools are becoming available at a fantastic rate. Others are learning to use them as rapidly as they are developed. Gentlemen, we have perhaps five years before technology will have passed us by—unless the architectural profession acts quickly."

Conferees were also worried about where tomorrow's researchers are coming from. Many who attended are educators; to a man, they are concerned with ways of building a *capability* for research into their students. In some ways, the educator's task is more urgent than the practitioner's, since the educator's product is so much longer reaching the market—a market which needs it yesterday.

MARILYN E. LUDWIG
Assistant Editor

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Your Voice in National Legislation



CAPITOL HILL, where most of the action regarding legislation goes on, swarms with lobbyists and others seeking to influence legislation for almost every conceivable interest in these United States. The evil connotation that some columnists have given to the word lobbyist is by no

means universally deserved. Lobbying is legally defined and controlled through registration and quarterly reports of activity. Much lobbying is in the public interest and not for selfish purposes.

The Institute's concern with legislation and governmental affairs in general has increased greatly in recent years at both national and state levels. There is quite a difference between the two. At the state capital, legislation of concern to architects is very likely to affect practice directly. Proposed laws relating to licensing of professionals, plans for stock schools, state bureaus of architecture, bond issues or statutes of limitations are typical of those appearing on legislative dockets in one state after another.

National legislation is broader in scope and its significance to the profession is not always as quickly discernible as state legislation. The increase in the Institute's concern with national governmental affairs has two causes: first, the expansion of the profession's interest beyond the architecture of buildings to the architecture of cities; and second, the increasing amount of legislation dealing with the problems of cities.

There was a time when a housing bill had significance for little more than single family housing. Recent "omnibus" housing bills deal with various types of multifamily housing, urban renewal, housing for the elderly and even satellite towns. Legislation dealing with mass transit, highways and freeways—even billboards—is now of concern to a professional society that has declared war on community ugliness and committed itself to greater capabilities in urban design.

The creation of a cabinet level Department of Housing and Urban Affairs forebodes extensive legislation of profound significance to architects.

The national AIA organization is legally constituted to take a position on national legislation. Kenneth Landry and I are registered as lobbyists. Our representatives (usually our officers) may appear before Congressional hearings. We may recommend to our components their support or opposition of a

particular bill. Our position on any piece of legislation is determined by the national officers with the approval of the Board. The development of a position is often assigned to a national committee of the Institute whose work specializes in the subject matter of a bill under consideration. Staff has the job of bird-dogging legislative bills, interviewing Congressmen and government officials to assemble the facts for decision-making.

In testifying before Congressional committees, we make it a point to speak as a *professional architectural* society. The legislation we are concerned with can generally be judged in terms of its benefit to the public. The more complicated bills on housing or urban affairs often contain titles where the subject matter is beyond the purview of our profession. We refrain from testifying on any subject outside our field of competence. Unlike some organizations, the AIA is not customarily for, nor steadfastly against, the policies of any political party. If we oppose a bill or some portion of a bill, we state the reasons for our opposition and propose an alternative whenever we see the possibility.

We realize that we cannot represent the opinion of 100 percent of the membership, which probably is made up of a normal proportion of conservatives and liberals. Traditionally, the delegates to our national conventions enact resolutions expressing the consensus on national issues that shapes our legislative policies. In 1957 the convention endorsed the concept of a Department of Housing and Urban Affairs.

The Institute will not inject itself into the broad social and political issues which transcend the sphere of architecture. On these matters our members, as citizens, may express their views through other channels.

We have enough to do in the cause of architecture—benefitting today by the President's espousal of the causes of a Great Society, beauty and better communities. Never before have these matters received so much exposure in mass communications media.

When we speak on legislation we must state that we represent 17,000 corporate members. Compared with the representation of a giant industry or a labor union this is a very small number indeed. So we see to it that our voice is that of professional reason, of concern and influence in matters of man's environment. We find that it commands respect.

WILLIAM H. SCHEICK, FAIA
Executive Director



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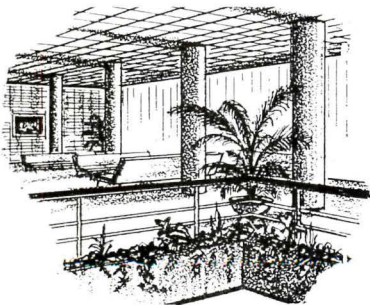
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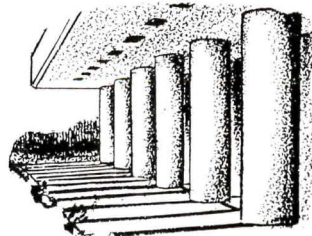
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OCTAGON OBSERVER

FEDERAL LIAISON / Architects Named to GSA Design Panel

Seventeen AIA members have been appointed to a panel to advise the General Services Administration on the design of building projects under its supervision.

GSA Administrator Lawson B. Knott Jr. said the following will serve:

Max Abramovitz FAIA, New York; Max Brooks FAIA, Austin, Tex.; Joseph G. Durrant, Dubuque, Iowa; David L. Eggers, New York; Max Flatow, Albuquerque; Grant Fordyce, New York; Albert S. Goleman FAIA, Houston; Robert F. Hastings FAIA, Detroit; and James Hunter FAIA, Boulder, Colo.

George E. Kassabaum, St. Louis; Vincent G. Kling FAIA, Philadelphia; Charles Luckman FAIA, Los Angeles; William G. Lyles FAIA, Columbia, S.C.; Arthur Gould Odell Jr. FAIA, Charlotte, N.C.; Cyrus Silling FAIA, Charleston, W. Va.; Warren W. Taylor, Nashville; and Henry L. Wright FAIA, Los Angeles.

The panel concept was adopted several months ago, and Knott, in making known the recently appointed members, said the group, known as the Public Advisory Panel on Architectural Services, "reflects the expressed desire of President Johnson that the best possible contemporary architectural thought and skills be applied to the design of Federal buildings."

The impact of GSA's building program on Washington, D. C., and cities and towns across the country is evidenced by the fact that since the mid-1950s Congress has authorized more than 500 public projects with a total estimated cost in excess of \$2 billion.

Knott pointed out that more than 90 percent of GSA's work is designed by architects registered in the states where the projects are located.

The panel, which also includes GSA's acting commissioner of the Public Buildings Service, William A. Schmidt, has four principal functions: 1) to develop and recommend criteria for the selection of

architects and for contractual relationships with architects; 2) to review GSA design standards and procedures and recommend changes felt necessary; 3) to advise the administrator in the selection of architects for significant projects; 4) to advise on the acceptability of designs when Knott so requests.

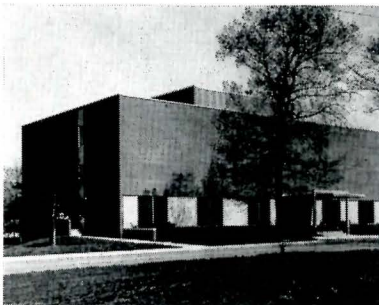
ARMY ENGINEERS PROMOTE DESIGN: The U. S. Army Chief of Engineers' first award for distinguished architectural achievement has gone to an Atlanta firm and the Savannah, Ga., District, Corps of Engineers.

The award, to be made annually as a means of inspiring and recognizing good design, was presented

ers, government officials and the public now recognize that if our country is going to be a fit and pleasant place to live in, its man-made facilities must be handsome and well planned, and its countryside must be retained and protected," Nes told the ceremony gathering. He offered the collaboration of the AIA in achieving higher design standards.

Jurors for the awards program were J. Roy Carroll Jr. FAIA of Philadelphia, Edward J. Maher AIA of San Francisco and Joseph D. Murphy FAIA of St. Louis, who also attended the ceremony.

Selected for honorable mention was the Second Army Medical



Top of the List: Projects at Fort Benning, Ga. (above), and Fort Meade, Md. (left), win citations.

Laboratory at Fort Meade, Md., designed by the Washington, D. C., firm of Faulkner, Kingsbury & Stenhouse under the supervision of the Baltimore District.

Maj. Gen. Robert G. MacDonnell, deputy chief of Engineers, presented the awards. The Washington delegation to the ceremony included Daniel M. Luevano, Assistant Secretary of the Army for Installations and Logistics.

for the design of the Infantry School's Academic Building at Fort Benning, Ga.

The building, designed by Abreu & Robeson, was selected from a field of 10 entries.

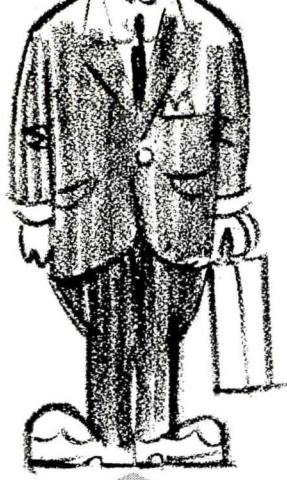
Institute members present at award ceremonies in Savannah included First Vice President Charles M. Nes Jr. FAIA, South Atlantic Director Bernard B. Rothschild and staffer Kenneth C. Landry, administrator of governmental affairs.

"Good design is a vital part of our visual environment, and we believe that enlightened business lead-

MILLIONS FOR COLLEGE WORK: More than \$390 million was allotted in the last fiscal year in loans and grants to colleges and universities for construction of certain facilities under the Higher Education Facilities Act of 1963.

The funds, used also for the rehabilitation or improvement of

Continued on page 18



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CALENDAR

Nov. 10-12: Building Research Institute Fall Conferences, Washington Hilton Hotel, Washington, D.C.

Nov. 18: University of Wisconsin Engineering Institute, Madison

Nov. 22-24: NSCCA-Architectural Barriers Institute, Chicago

Dec. 8-10: "The Troubled Environment: Business Examines Social and Economic Barriers to Improving Our Cities," a symposium of ACTION Council for Better Cities, Shoreham Hotel, Washington, D.C.

Jan. 5-8: National Society of Professional Engineers winter meeting, Americana Hotel, Bal Harbour, Fla.

April 23-30: Virginia's Historic Garden Week, Garden Club of Virginia

April 26-28: National Conference on Religious Architecture, San Francisco

May 8-12: ASLA Annual Meeting, Yosemite National Park, Calif.

June 26-July 1: AIA National Convention, Denver Hilton, Denver

AIA Regional and State Conventions

Nov. 17-20: Florida Region, Jack Tar Hotel, Clearwater

April 13-15: Gulf States Region, Hot Springs, Ark.

AIA Committee and Related Meetings

(At the Octagon unless otherwise specified)

Nov. 16: Joint Committee on the National Capital, Washington Center for Metropolitan Studies, Washington, D.C.

Nov. 18-20: First AIA Workshop on Urban Design, Philadelphia

Nov. 22-24: Annual Student Forum

Nov. 29-30: Executive Committee

Dec. 1-2: Board of Directors

Dec. 6: Philadelphia Chapter Drawing Project

March 2-4: Honor Awards Jury

March 9-10: Reynolds Memorial Award Jury

Tour

Feb. 13 and Oct. 9, 1966: Mexican Architecture and Interior Design Seminar-Tours. Two weeks each. Information: T. H. Hewitt, Apartado Postal 5-251, Mexico City 5, D. F.

Rocky Mountain Fever: Next year's AIA convention will be the first ever held in Denver. Preparations for the national meeting are well along toward the finished stage. Two things are certain—the date and hotel as indicated in the calendar; the hotel, incidentally, is in the heart of the Mile High City. On board at Institute Headquarters is a new conventions manager, John R. Carlson, 37, of Falls Church, Va., who until recently was with the Dairy and Food Industries Supply Association. Carlson also serves as manager of the Building Products Exhibit and brings to this activity a background of experience as exhibits manager for the Dairy and Food Industrial Exposition. He has been active in the National Association of Exhibit Managers, serving that group since 1960 as editor of its newsletter. Carlson succeeds Dale Wharton, who entered private industry. ■

Construction Details

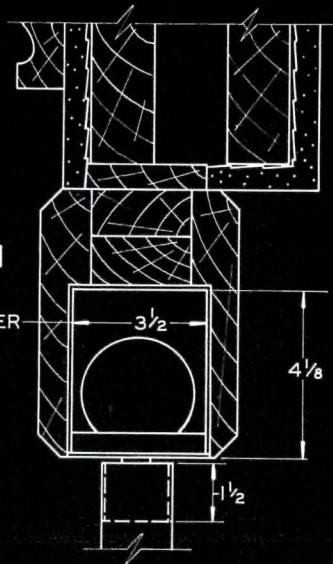
for LCN double-acting overhead concealed door closers shown on opposite page

The LCN 444-466 closer's main points:

- 1 Brings a double-acting door to a quiet, sure close on center
- 2 Full rack-and-pinion, two-speed control; unique centering device
- 3 Ball-bearing center pivots included
- 4 Built-in hydraulic back-check to cushion opening swing of the door
- 5 For interior doors of wood or metal

HEAD SECTION

LCN CLOSER
No. 466



Complete catalog on request
or see Sweet's 1965, sec. 19e/Lc, p. 2

LCN

LCN CLOSERS, PRINCETON, ILLINOIS

A Division of Schlage Lock Company

Canada: LCN Closers of Canada, Ltd.,
P. O. Box 100, Port Credit, Ontario

Modern Door Control by

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Closers concealed in head frame

King County Court House
Seattle, Washington

Paul W. Delaney & Associates
Architects—Engineers

LCN CLOSERS, PRINCETON, ILLINOIS

Construction Details on
Opposite Page



facilities needed to expand enrollment capacities, were allocated as:

- Federal matching grants for undergraduate facilities, private and public, with special provisions for public community colleges and public technical institutes and for graduate schools or cooperative graduate centers created by two or more higher education institutions.
- Loans to help finance the con-

struction of eligible facilities at any of these institutions.

Grants for construction of undergraduate facilities, involving 451 institutions, came to \$224,362,675; grants for graduate facilities, made to 85 institutions, totaled \$60,000,000; and loans amounting to \$107,706,000 went to 127 schools.

BUDOCK OFFICES REDESIGNATED: District and Area Public Works Offices of the Bureau of Yards and

Docks, Department of the Navy, have been redesignated as Bureau Field Divisions.

Rear Adm. Peter Corradi said the change was dictated by an increased workload, much of which is absorbed by the field units "because we execute our mission on a decentralized basis," and for greater flexibility in meeting cyclical work.

SEMINARS / Institute Sets First of Series

The Institute is sponsoring an Urban Design Workshop in Philadelphia, November 18-20. It will be the first of three sectional seminars offering working data.

Among those on the program for this "Short Course for the East" are Edward Logue, Henry Wright, Clarence Stein FAIA, Morton Hoppenfeld AIA, Albert Mayer FAIA, Robert Zion, Vincent G. Kling FAIA, I. M. Pei FAIA, Edmund Bacon AIA, George Kostritsky AIA, David Crane and Robert Geddes AIA.

The speakers will give basic, how-to presentations which will cover such areas as the architect's role in highway and mass transit design, the politics of urban design, downtown revitalization, the design of the suburbs, shopping center design, fine details of urban design, in-town residential areas, planning with people, waterfront design and execution of projects.

The three-day workshop will be held at the University of Pennsylvania with Dean G. Holmes Perkins FAIA, School of Fine Arts, as host.

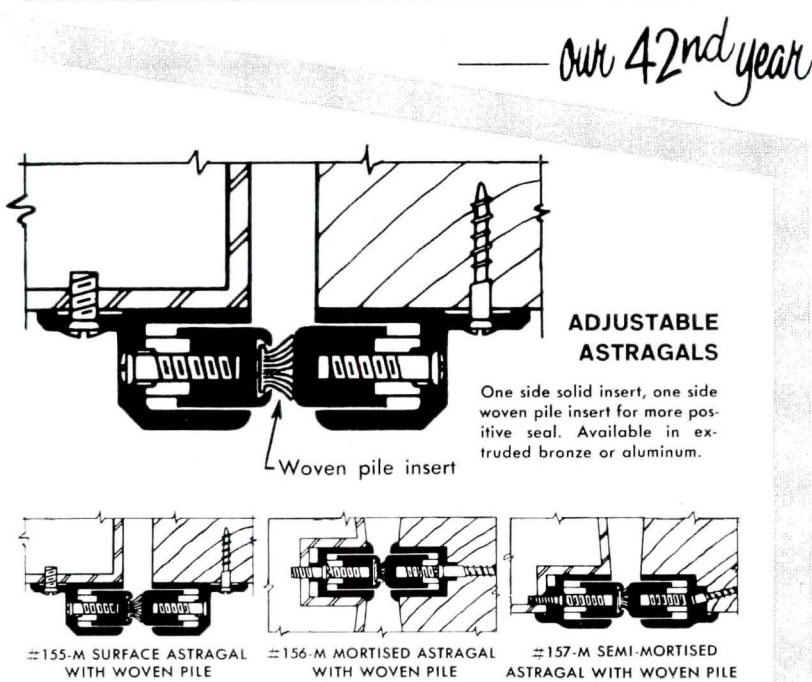
Planned for the first day, Thursday, is a survey of urban problems requiring the architect's attention. The second day will be divided into small seminars taking up specific case studies of urban design projects on both government and private levels. The third will concentrate on an analysis of urban design contracts, renewal legislation, job development and public agencies.

Subsequent workshops for the western and central areas will be held in San Francisco and St. Louis, but dates have not been set.

CHAPTERS / Termination of Membership Looms

Chapters of the Institute have been asked to notify their membership of the December 31 termina-

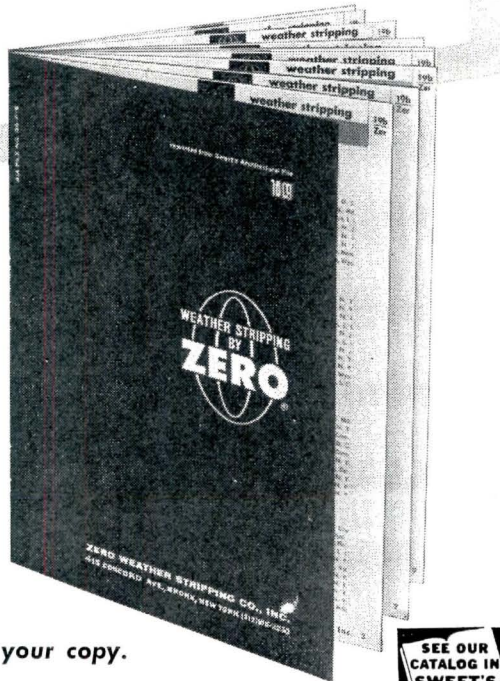
Continued on page 92



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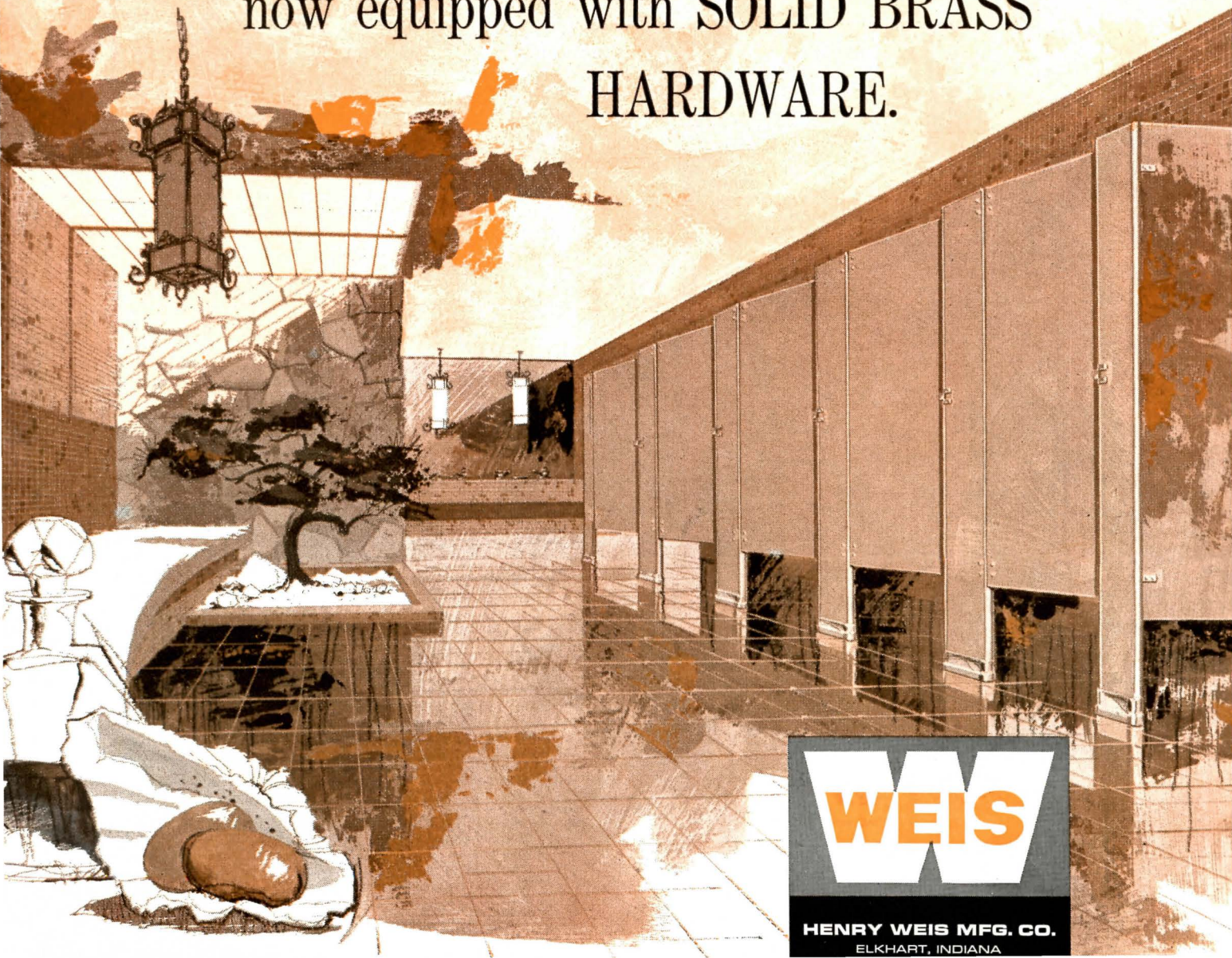
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The real challenge of a toilet compartment is to "take" the day-by-day beating of hard use---schools, plazas, dormitories, factories, bowling lanes, filling stations, Y. M. s, public restrooms are typical. An important reason why all Weis Compartments are now equipped with **SOLID BRASS HARDWARE.**



New pace-setters in building automation!

SOLID STATE **ELECTRONIC** **CONTROL CENTERS** **BY JOHNSON**

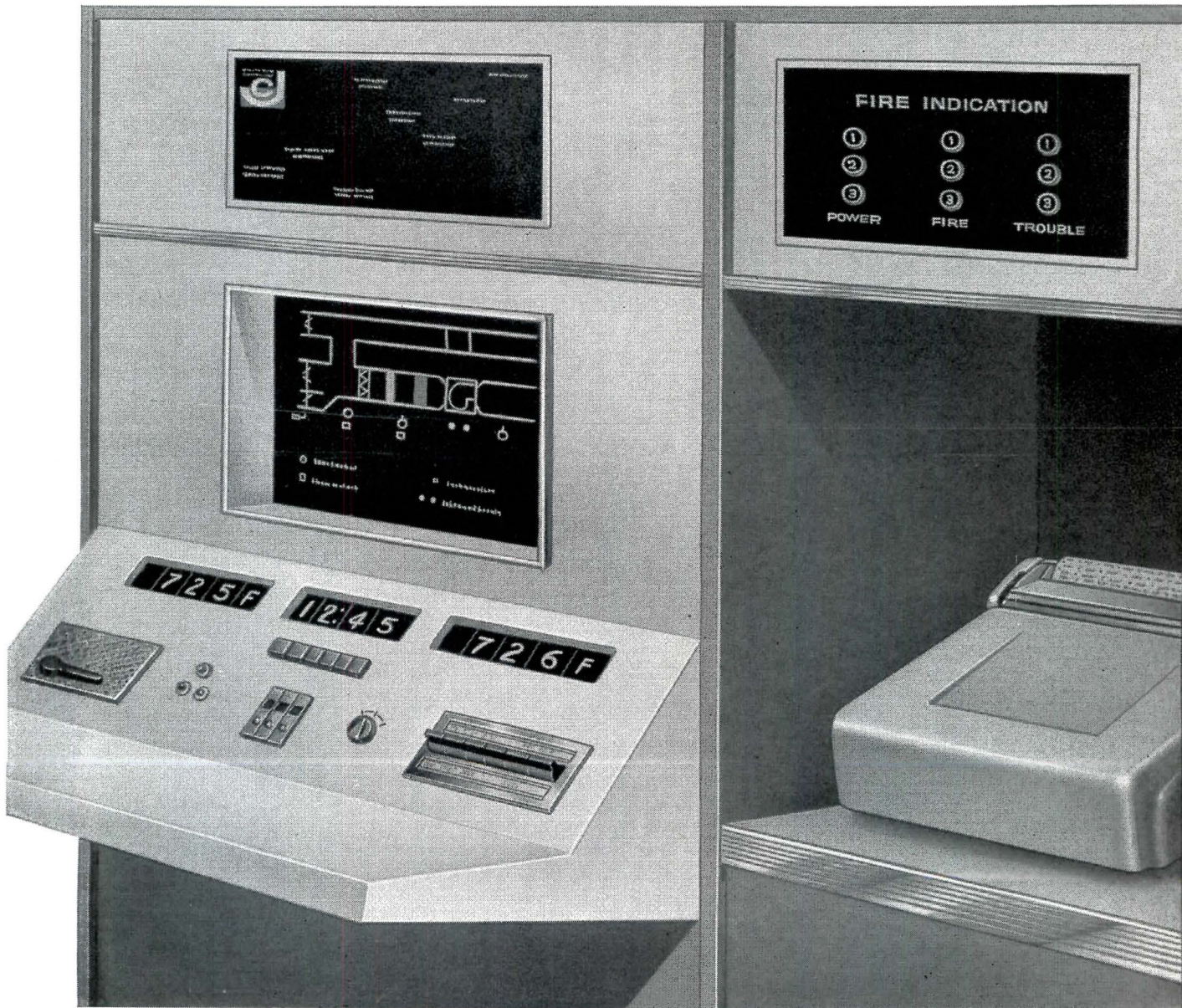
Our new solid state electronic control centers establish entirely new standards of efficiency in building automation! They offer you reliability, economy, and flexibility of design and operation that far surpass anything heretofore available.

Key component is our new T-6000 digital system, consisting entirely of solid state devices. That means no more vacuum tubes, linkages, or expensive mechanical adjustments! What's more, it cuts the cost of remote reset and control and is the first system that can utilize, economically, both pneumatic and electric signals.

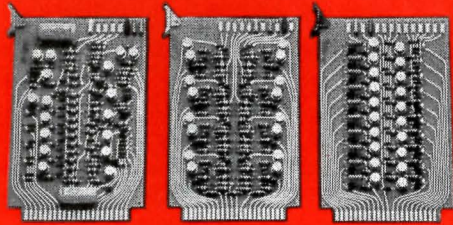
With Johnson solid state electronic control centers, you can automate as many or as few building systems and functions as you wish, including air conditioning control, security, equipment surveillance, illumination, communications, fire detection, programing, process monitoring, and many others. One center can serve any number of buildings.

And, most important, you get complete flexibility of design and operation for "Management by Exception," the Johnson concept for total building operation that outsaves them all!

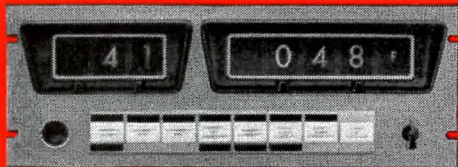
But there's more, much more . . . a host of other exclusive features and advantages! Send for complete details today.



Featuring the remarkable new T-6000 Solid State Digital System



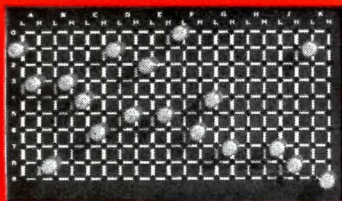
Printed Circuit Cards



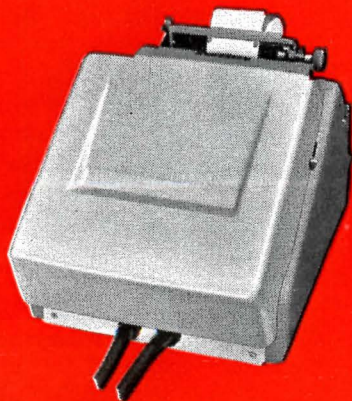
Processor Control Panel



Alarm and Status Annunciator Panel



High-low Alarm Limit Selector



3" Digital Printer

DESIGNED FOR MANAGEMENT BY EXCEPTION

Johnson electronic control centers equipped with our T-6000 solid state digital system perform any or all control center functions: monitoring, alarm, indication, remote reset/control, recording, communication. The T-6000 monitors all vital points essential to the total building operation, but directs attention to the off-normal conditions only. This is "Management by Exception," the Johnson concept that provides matchless operating efficiency and savings.

ACCEPTS ALL TYPES OF SIGNALS

The processor, heart of Johnson's Solid State Digital System, accepts all types of signals: electric and pneumatic, analog and binary. Printed circuit cards in the processor contain all circuitry required to coordinate change-of-state, programed, and command cycles for the system. Replacing or adding a circuit is as simple and foolproof as sliding a card in a slot!

SCANS AN UNLIMITED NUMBER OF POINTS

The T-6000, with the industry's fastest and most efficient scanner, monitors control points at the rate of 25 analog control points or 80 binary control points per second! There is no limit to the number of points that can be supervised. And units can be expanded or added as needed to enlarge the system.

WARNS OF OFF-NORMAL CONDITIONS

The T-6000 includes a memory cell which "memorizes" the conditions of scanned points and issues a warning in the form of a visual display and/or print-out and, if desired, an audible alarm. A unique annunciator panel, with individual indicators for 100 points, provides positive display of key control points. Alarm conditions are indicated in red, status conditions in green. Any number of annunciators may be used.

FURNISHES PRINTED RECORDS

The T-6000 can be equipped with a 3" tape or 15" carriage printer. In the programming sequence, systems may be locked out, allowed to operate normally, or selected for command or programed logs. When a change of state occurs, the logger records the off-normal conditions in red, normals in black.

PROVIDES MAXIMUM FLEXIBILITY

Mode switches give the engineer a choice of 10 different cycles of operation. Individual systems can be programed independently of the others whenever necessary. Any point or group of points may be selected for continuous monitoring. If desired, two or more systems may be monitored at the same time. For the ultimate in total building automation, the T-6000 can be integrated with a computer. Many other operational features are available.



JOHNSON CONTROL
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JOHNSON SERVICE COMPANY

Milwaukee, Wisconsin 53201

I'm interested in learning more about Johnson Solid State Electronic Control Centers. Please send me:

- Bulletin T-6000, describing your solid state digital system.
- Publication No. 2018, describing your new control centers featuring "Management by Exception."

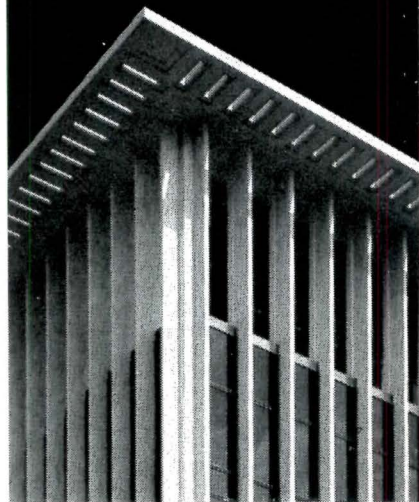
Name.....

Firm.....

Address.....

City & State..... Zip.....

WASHINGTON LANDMARK

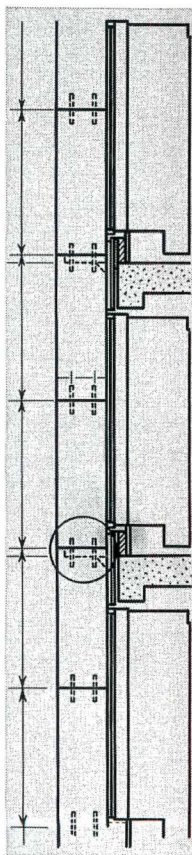


In the National Geographic's new headquarters building, architect Edward Durell Stone employed Vermont Imperial Danby Marble throughout the interior and exterior.

To erect the vertical fins, horizontal shelf angles at each level support two marble courses. Matching holes drilled into the upper and lower portion of each fin take $\frac{3}{4}$ " hot-dipped galvanized dowels, to provide a hidden anchor, with each pair mated securely to those above and those below.

• • •

Should you have any questions concerning new or unusual methods of marble application, please be sure to let us know. The Vermont Marble Company is always glad to lend technical assistance and design counsel whenever possible. Write today for our latest technical literature.



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CO., LIMITED and ONTARIO MARBLE CO.

BOOKS

Education of Vision/Structure in Art and in Science/Nature and Art of Motion. Gyorgy Kepes, editor. New York: Braziller, 1965. 233/189/195 pp. \$12.50 each

Three volumes of a projected six-volume series entitled Vision and Value, these include illustrated papers by 40 authorities, large and small, old and new. Production is careful, illustrations and text well organized and editing better than usual.

In any such collection there is bound to be unevenness, and only a reed in the wind could bow to all the opinions and theories herein advanced. They are fairly consistent, however, and make a real contribution to visual education and to concepts of structure and motion. Emphasis is on the visual, and it must be pointed out, as one strong reaction, that there are other senses active in our environmental experience; that they interact with vision; and that we cannot afford to neglect them in education for or practice of environmental design.

Vol. 1, "Education of Vision," deals with visual information and with techniques and problems of visual education, especially with art and design education. This reviewer has spoken and written on many occasions of our urgent need to teach people to see. Several of these essays have wonderful insights for teacher, practitioner and intelligent consumer or client. There is, however, a rather shocking disregard of the important contributions of transactional psychology which stem from the work of the late Adelbert Ames and his students. The famous distorted rooms are only a small part of that contribution which should have been placed in its rightful perspective with these statements—some of which, perhaps unconsciously, depend on those pioneering explorations of visual phenomena.

Vol. 2, "Structure in Art and in Science," brings together the falsely separated "two cultures" by means of the unifying concept of structure. Essays by scientists are followed by statements by structural designers, by urban planners and contempo-

rary artists, with quite fascinating illustrations at microscales and of structural and planning study models as well as of executed structures. The discourse in several of these papers is at a high level of intelligence with exciting glimpses of what the future may bring when these concepts are related to and expressed in environmental structures. The paper by some young Britishers born about the time Clarence Stein FAIA was doing Radburn seem to have rediscovered some of its ideas as their own.

Vol. 3, "Nature and Art of Motion," deals with broad aspects of motion as seen by a physicist, by psychologists and critics, followed by papers of artists, by some excellent statements on the cinema and one on exhibition design. In one paper, an art historian turtles his neck in a rather pedestrian effort to relate art and biological evolution. The final essay on urban motion seems almost an afterthought. The statements and illustrations of kinetic art on the other hand are exciting, and that on cinema esthetics is one of the best in the series.

ERIC PAWLEY, AIA

Construction Estimating and Job Preplanning. George E. Deatherage. New York: McGraw-Hill, 1965. 302 pp. \$14.50

This is a "method" book, for the author—55 years in the construction business—claims that the most important factors in fabricating or assembling any product are the methods used. And, if the method is right, "even a poor organization will do the work at about the same cost as a better one." By method, Deatherage means that particular combination of men and machines selected to perform each specific part of the work to be done.

The book shows how to estimate the cost of a job, and its greatest value, perhaps, is its emphasis on job preplanning. It tells how to calculate the output of various machines, how to use a gang chart, how to select equipment, how to measure quantities of unfinished work. It is detailed, including suggested forms for various phases of the job, tool reminder lists, reminder lists of staff overhead cost items, checklists of office equipment and supplies. This is a useful book. ■



Municipal Auditorium, Boston, Mass. Hoyle, Doran and Berry, architects. Nearly 600 24-carat textured gold Terra Cotta units 1'-5 $\frac{5}{8}$ " x 1'-1 $\frac{1}{8}$ " x 1 $\frac{1}{4}$ " were specified as inserts for facade. Seal, which is 12' in diameter, is white and 24-carat textured gold Terra Cotta.



ARCHITECTURAL TERRA COTTA of today
is versatile, highly stimulating
to architectural expression.

CV DURATHIN is thinner but equally colorful.



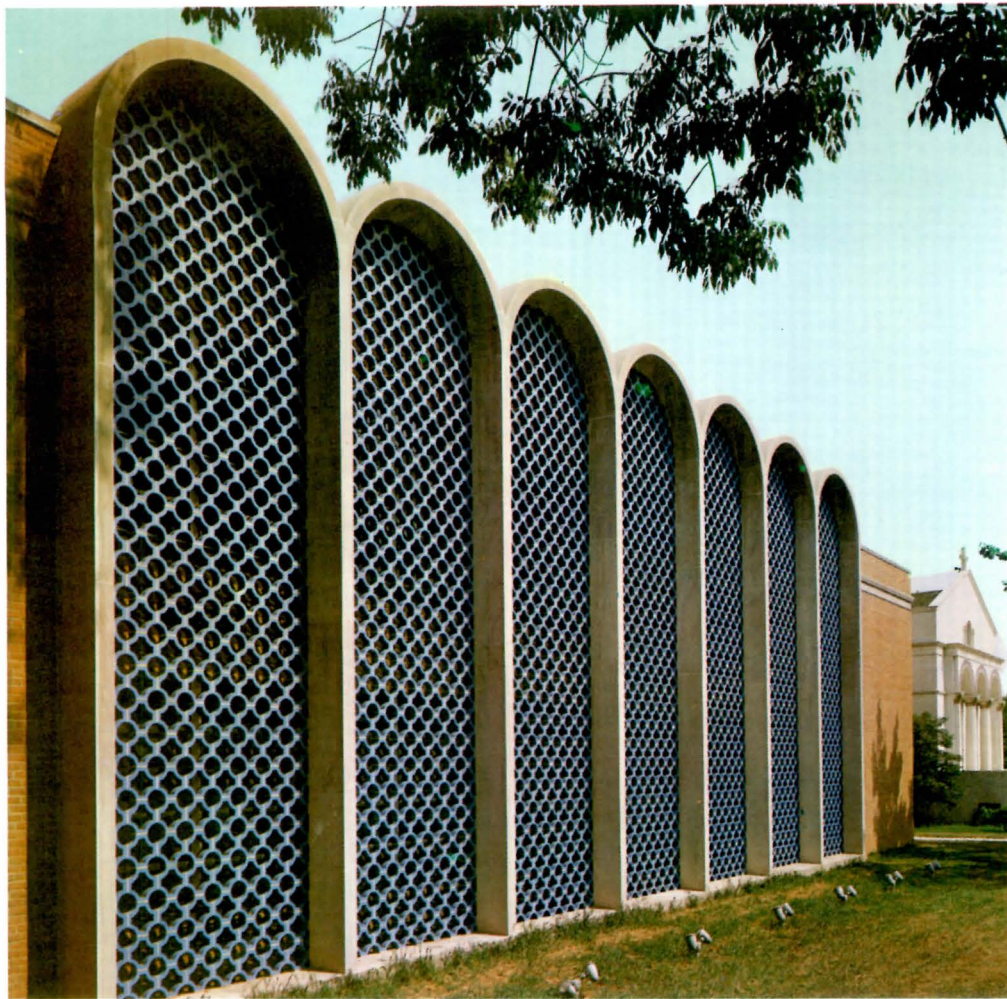
Office Building, Baltimore, Md. Thomas R. Silcox, architect. CV Durathin Insulated Panels in mottled cinnamon were specified in sizes up to 4'-6" x 4'.

**FEDERAL
SEABOARD
TERRA COTTA
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Keeping pace with architectural
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ARCHITECTURAL TERRA COTTA and CV DURATHIN®

Church Center of Saints Constantine and Helen Greek Orthodox Church, Washington, D.C. T. H. Locraft & Associates, architects. Terra Cotta grille design FS-A was specified for this seven section perforated facade.



Philippe Perrier Secondary School, Montreal, Canada. Roland and Dumais, architects. In addition to the spandrels and jambs in the colors shown, Terra Cotta was specified in brown for facing in vestibule.



Lerner Shop, Monmouth Shopping Center, Eatontown, N. J. Kahn & Jacobs, architects. Terra Cotta in medium blue curved units and light mottled blue flat surfaces make an interesting, harmonious combination.

These time-tested ceramic building materials provide almost unlimited flexibility as to surface colors, textures, shapes and designs. Moreover, they possess the important characteristics of adequate strength, enduring performance, and ease of maintenance.

ARCHITECTS AND DESIGNERS have available in these Federal Seaboard products, a material of such versatility as to permit full scope for imaginative and creative design of buildings with distinctive appeal to the eye, not only for design, but also for color and texture.

VERSATILITY OF DESIGN IN TERRA COTTA is derived from the fact that the prime material employed is clay which permits shaping into any design desired and, when burned to required temperature, fuses into a dense solid in the form to which shaped.

VERSATILITY IN COLOR of Terra Cotta is based upon the affinity of clay for certain minerals and chemicals which, as glaze coatings, are applied to the formed clay body to give it the desired color. When burned to required temperature, the glaze coatings vitrify and fuse with the clay to provide an impervious surface.

FEDERAL SEABOARD produces the following basic categories of Architectural Terra Cotta and CV Durathin:

Ornamental Terra Cotta and sculpture for use in buildings or separate from them. Produced by mold pressing, these products are limited in design only by the imagination.

Terra Cotta of straight line and less ornate design. It is used as facing material, coping, column covering, etc., produced by extrusion through dies to specified dimensions.

Terra Cotta Grilles for use in perforated facades, as well as free standing screen walls. They are machine extruded through dies in a wide range of distinctive designs.

CV Durathin, for use as exterior or interior facing. CVD is power pressed into a thin ($\frac{3}{8}$ inch) material of relatively large module ($17\frac{3}{4} \times 23\frac{3}{4}$ inches).

SHAPES AND FORMS—Architectural Terra Cotta can be made in an infinite variety of shapes and forms to meet every need from classic ornateness to contemporary design. From a practical point of view, processing by pressing in molds or extruding through dies permits efficient production of repetitive patterns without sacrifice of individualism in designs.

COLORS AND TEXTURES—With virtually every color in the spectrum at their command, Federal Seaboard technicians can meet the most precise specifications:

Exposed surfaces can be covered with matte, satin or gloss finishes which are vitrified to a glassy state, and which can be made in a wide range of colors in monochrome or polychrome.

Exposed surfaces can be covered with "vit" compounds in a wide range of solid or mottled colors to provide an impervious and rough-type finish.

Exposed surfaces can be left completely unglazed and thus disclose the natural clay body in a variety of colors dependent upon the clay mix used, and thus provide what is called frequently the "earthy" colors.

Textures of surfaces can be produced in a wide range of variations, including a smooth, even plane, coarse-roughened, tooled, beveled, fluted or custom-designed.

UTILIZATION IN STRUCTURES: The following basic procedures refer to installation of Terra Cotta or CV Durathin in walls, but do not apply to sculptured Terra Cotta not related to the structure.

Adhesion Type . . . The Federal Seaboard product is attached to the backing by the bond between mortar and masonry without use of metal ties, but should not be more than $\frac{1}{4}$ -inch thick, including ribs.

Anchored Type . . . The Federal Seaboard product is attached to the backing by non-ferrous anchors as added support for mortar, and should have a minimum one-inch thickness, exclusive of ribs.

Insulated Panels incorporating CV Durathin are also available for use in curtain wall construction and provide effective product utilization.

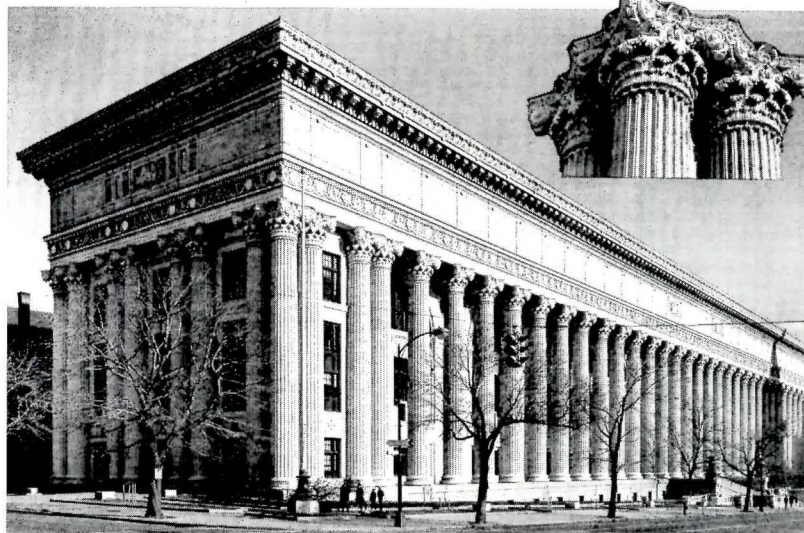
TIME-PROVED PERFORMANCE: Thousands of buildings of every type in the United States and Canada attest to performance attributes of Architectural Terra Cotta and CV Durathin.

Permanence—The impervious finish, fused into a solid clay body burned to some 2200 degrees F, permanently resists weather and retains its original colors indefinitely.

Maintenance—The hard, impermeable glazes act as an enduring seal against grime, smoke acids and other impurities, assuring the removal of any surface film by a simple soap-and-water washing.

Safety Factors—Fire resistance is "built in" to Architectural Terra Cotta and CV Durathin by the very nature of the material and the manufacturing process. Sanitation is encouraged by the quality of imperviousness that hinders bacterial growth. Because of these factors, you'll find Federal Seaboard facing materials in public rooms of many types where sanitation and extra safety are important considerations.

Individualism: Whatever your particular needs, Federal Seaboard can meet them precisely because Architectural Terra Cotta and CV Durathin are **custom-produced** to your specifications. In keeping pace with architectural trends for over 76 years, we have gained a vast reservoir of experience which is available to you at any time.



New York State Education Bldg., Albany, N. Y., originally designed in 1908 by architects Palmer & Hornbostel. Recently, when Charles S. Kawecki, Chief Architect of the Dep't. of Public Works, New York State, needed 54 new column caps, and over 1,000 lineal feet of ornamental cornice for the building, Federal Seaboard was able to meet his specifications by combining traditional craftsmanship in Terra Cotta with modern manufacturing methods.



Old World Pavilion Group, Glass House Point, Jamestown, Va. Ballou and Justice, architects. Bas-relief cartouche and panel were custom-made in polychrome Terra Cotta.

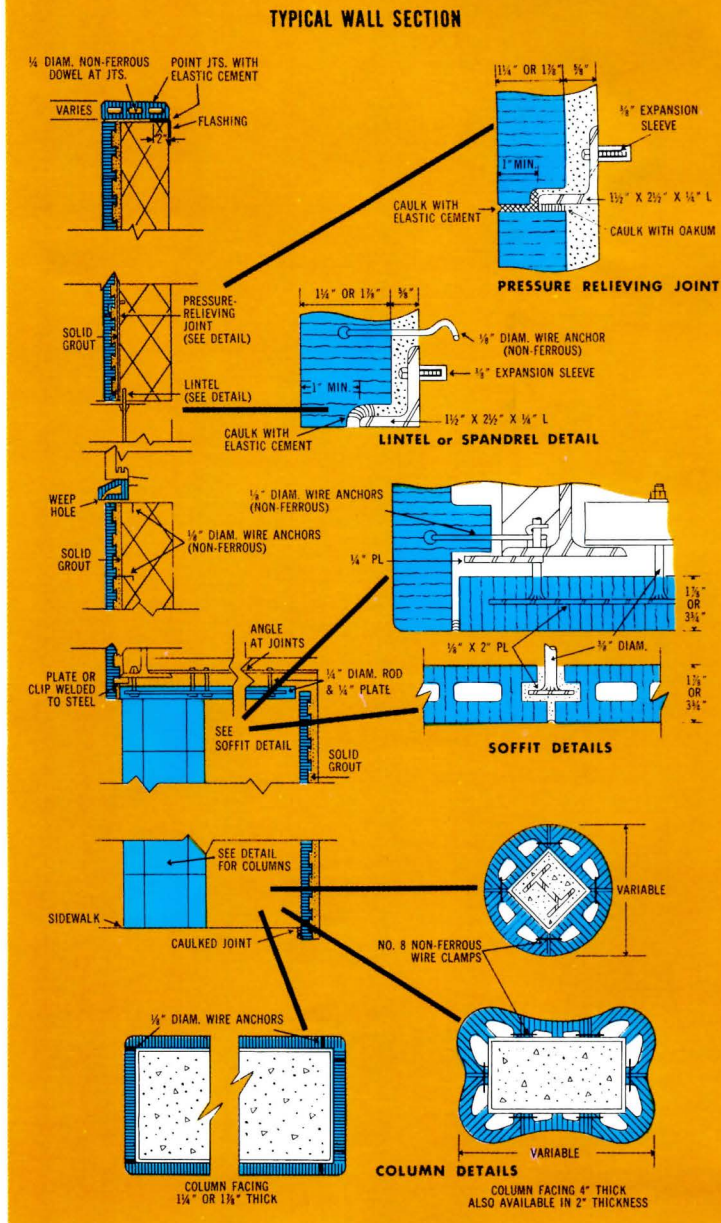


Deerfield Terrace Elementary School, Linden, N. J.
Finne-Lyman-Finne, architects-engineers. Terra Cotta
polychrome map mural in lobby is 10' high by 15' wide.

STRUCTURAL TERRA COTTA AND CV DURATHIN

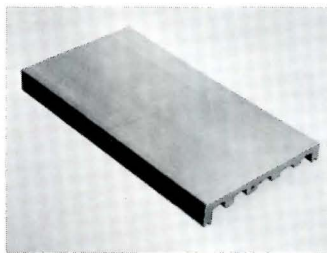
GUIDE TO THEIR UTILIZATION—The use of Federal Seaboard products is so diversified that space limitation prevents us from enumerating all the building types and structures for which they have been specified. However, the listing below and the chart that follows, will suggest where and how Terra Cotta and CV Durathin can best be utilized to meet your needs.

COMMERCIAL & INDUSTRIAL	PUBLIC SERVICES	OTHER STRUCTURES
Apartment Houses Hotels & Motels Office Buildings Shopping Centers & Stores Industrial Plants & Laboratories Restaurants & Dairies Service Stations	Federal, State, County & Municipal Educational Institutions Libraries, Cultural Centers Hospitals Churches & Related Buildings Transportation Terminals (Airports, Stations, etc.)	Stadiums & Gymnasiums Swimming Pools Dam & Water Treatment Installations Sewage Treatment Plants Power Stations Tunnels, Underpasses & Subways

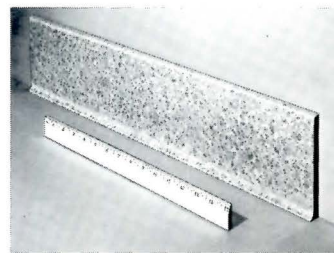


SOME OF MANY USES FOR WHICH FEDERAL SEABOARD PRODUCTS ARE SPECIFIED

	Architectural Terra Cotta	Ornamental Terra Cotta	Design Series	Terra Cotta Grilles	CV Durathin
EXTERIORS					
Facing Walls	X		X		X
Spandrels & Lintels	X		X		X
Vertical Piers, Mullions	X	X	X		X
Columns & Pilasters	X	X	X		X
Panel Walls			X		X
Screen Walls (Pierced)				X	
Screen Walls (Solid Back)				X	
Cornices	X	X			
Coping	X				
Windows (Sill, Head, Jamb)	X				
Soffits	X	X	X		X
Sculpture		X	X		
Murals, Seals & Emblems		X	X		X
INTERIORS					
Wall Facing (Lobbies, Corridors, Stairwells, Laboratories, Operating Rooms, Kitchens & Dining Areas, etc.)	X		X		X
Sculpture		X	X		
Murals, Seals & Emblems		X	X		X
Screen Walls (Partitions)				X	
SPECIAL APPLICATIONS					
Swimming Pools (Wall & Floor Facings, Depth and Distance Markers, Overflow Gutters, Ladders)	X				
Tunnels & Subways (Facing, Curbing, Lane Markers & Station Identification Signs)	X				X

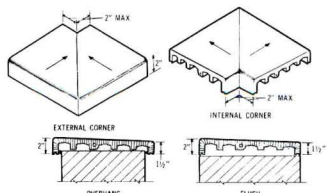


THIN-WALL COPING

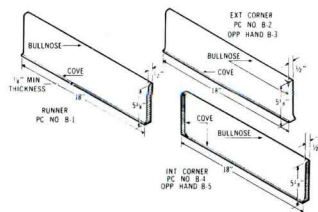


CV DURATHIN COVE BASE

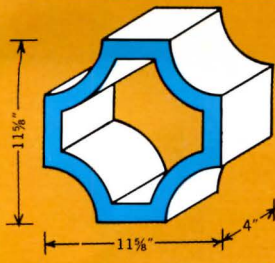
Recommended for use wherever color, quality and durability are required . . . and economies in cost, installation and maintenance are important considerations.



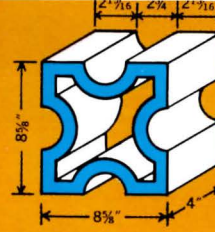
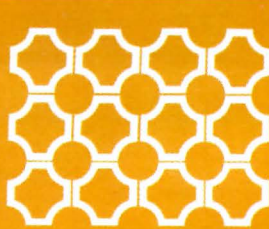
FACE HT. 2"
WIDTH Optional up to 24", to meet job requirements.
LENGTH Up to 24"
WEIGHT 9 lbs. per lineal ft. in 12" width.
COLORS Any of our many standard ceramic colors, plain or mottled, as well as a range of natural earthy unglazed colors from buff to maroon, and from buff to chocolate brown.
FINISHES Either glazed or unglazed.
CORNERS Both external and internal.



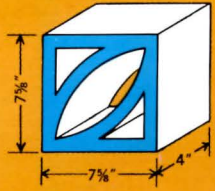
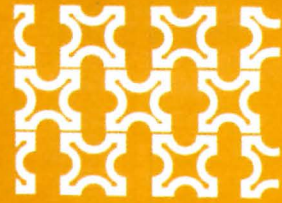
HEIGHT Up to 6"
THICKNESS 1/2"
LENGTH Up to 24"
WEIGHT 2 1/2 lbs. per lineal ft. in 6" height.
COLORS Any of our wide range of standard colors.
CORNERS Bullnose external corners; coved internal corners.
TOP Glazed radius bullnose return; when set flush, top edge is squared and unglazed to receive plaster.
JOINTS If desired, the units may be closely butted together, eliminating mortar.



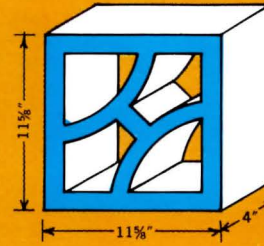
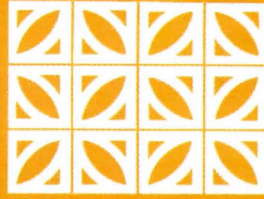
FS-A
Weights are as follows:
4" — 14 lbs.
6" — 21 lbs.
8" — 28 lbs.



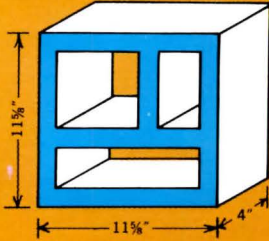
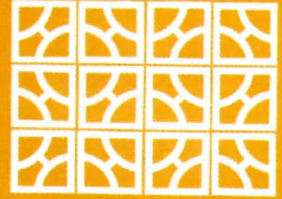
FS-HF
Weights are as follows:
4" — 10 1/2 lbs.
6" — 16 lbs.
8" — 21 lbs.



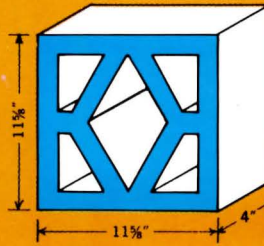
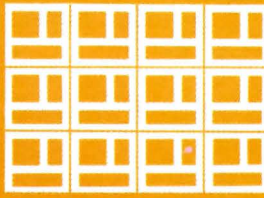
FS-EE
Weights are as follows:
4" — 11 lbs.
6" — 16 1/2 lbs.
8" — 22 lbs.



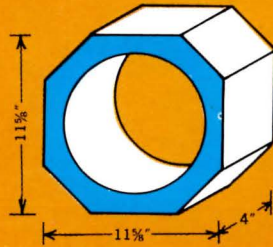
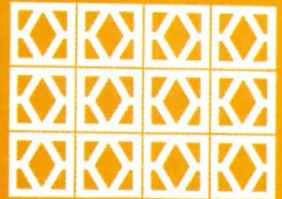
FS-J
Weights are as follows:
4" — 20 lbs.
6" — 30 lbs.
8" — 40 lbs.



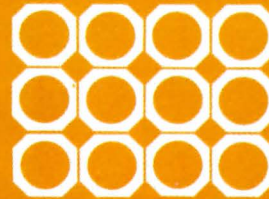
FS-G
Weights are as follows:
4" — 22 lbs.
6" — 33 lbs.
8" — 44 lbs.



FS-N
Weights are as follows:
4" — 24 lbs.
6" — 36 lbs.
8" — 48 lbs.



FS-K
Weights are as follows:
4" — 14 lbs.
6" — 21 lbs.
8" — 28 lbs.



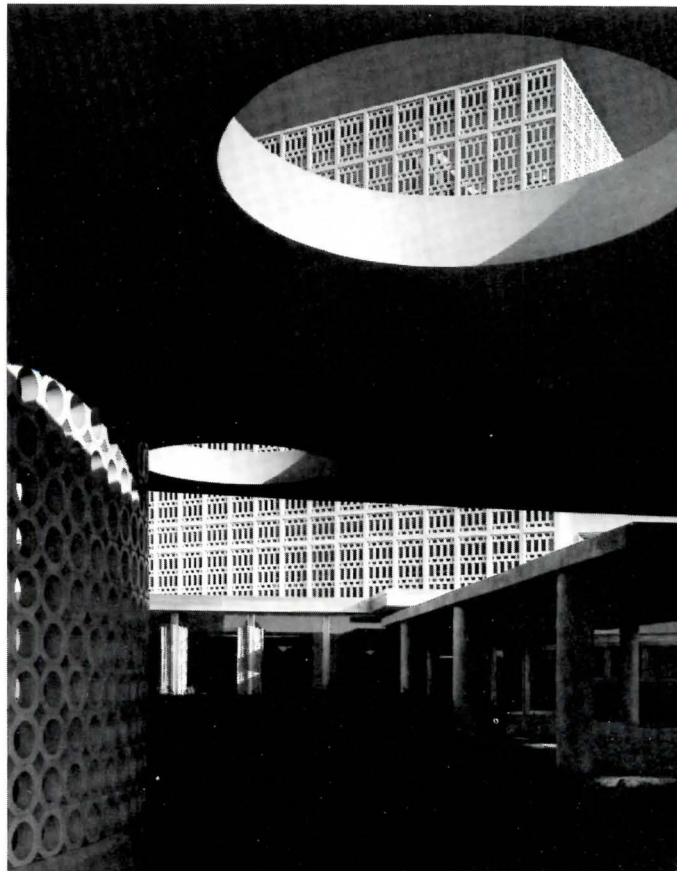
SEVEN OF MANY GRILLE DESIGNS THAT **FEDERAL SEABOARD** WILL CUSTOM-MAKE IN YOUR CHOICE OF **CERAMIC COLORS**

The grille, long a basic architectural principle, is receiving increased recognition. In grilles, the unique versatility of Terra Cotta enables the architect to create without restraint. You can choose from our many standard patterns, or design your own grille in virtually any size, shape or form. Either way, you can select the *right color and finish* (glazed or unglazed) best suited

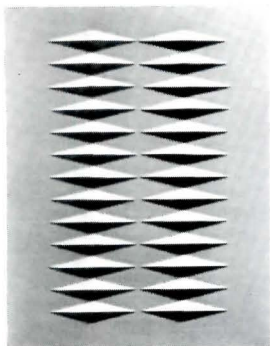
to your building and its environment. All Terra Cotta grilles are custom-made in a wide range of colors and, for economy, are machine extruded. When you specify Architectural Terra Cotta, the perforated facades and solar screens you design for sun control, ventilation or privacy will be as budget-wise as they are distinctive and practical.

*Motherhouse of the Mission
Helpers of Sacred Heart,
Baltimore, Md. Brother Cajetan
J. B. Baumann, OFM, FAIA.
Beige glazed Terra Cotta grilles
11 1/8" x 11 1/8" x 3" were specified
for solar screens on chapel.*

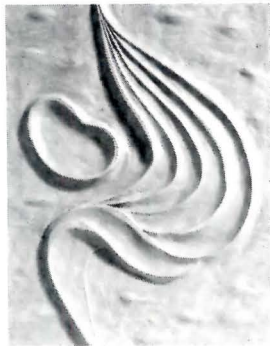
*Veterans Administration Hospital,
Washington, D.C. Designed by Eggers
and Higgins, and Edwin A. Keeble
Associates, Inc., architects. More than
27,000 glazed white Terra Cotta grilles
in various sizes up to 10" x 20" x 4"
were specified for screens enclosing
mechanical penthouse, terraces, stairs
and animal laboratory for this, the
world's most fully automated hospital.
Grille design FS-K was specified for
serpentine screens at entrance. Trim
for spandrel beams and structural
columns also was selected in
matching Terra Cotta.*



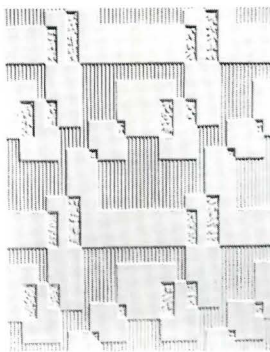
FS-10D



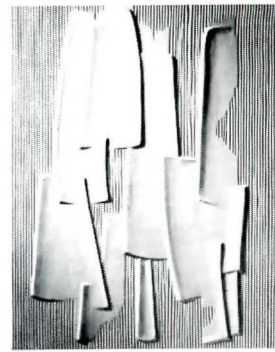
FS-13



FS-18



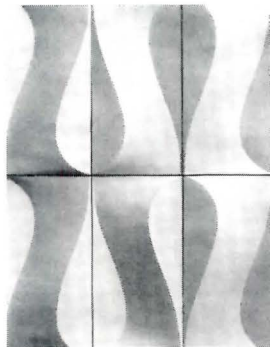
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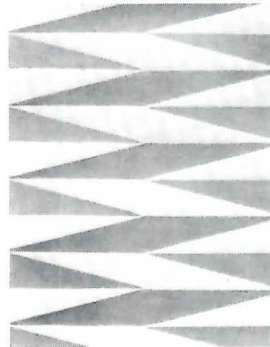
FS-24



FS-118



FS-122



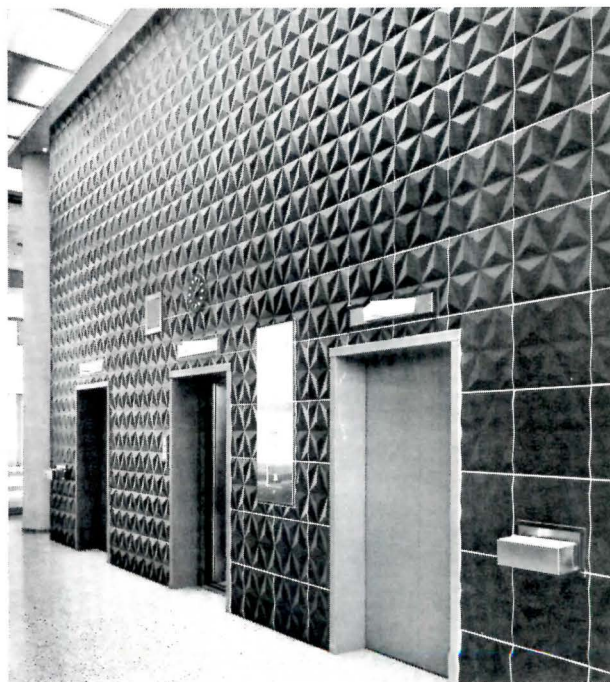
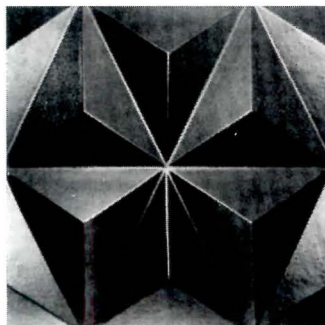
FS-138



DESIGN SERIES OFFERS MORE THAN A SCORE OF SCULPTURED PATTERNS

Illustrated here are nine of the many sculptured patterns in the FS Design Series. In unit sizes up to 17 $\frac{3}{4}$ x 23 $\frac{3}{4}$ inches, the Designs numbered under 100 are produced in $\frac{3}{8}$ -inch CV Durathin which accommodates a low relief. Wherever a deeper relief is desired as in 100 FS (below), the Designs, in unit sizes up to 19 $\frac{3}{4}$ x 29 $\frac{3}{4}$ inches, are produced in Terra Cotta as thick as 1 $\frac{1}{2}$ inches. Regardless of size or thickness, you can select a gloss, satin or unglazed finish, and specify almost any color in the spectrum. If you wish to create your own design, do so . . . for all are custom-made but not custom-priced.

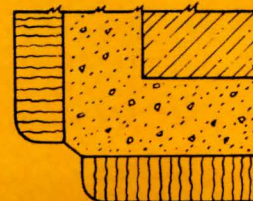
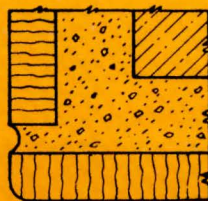
Middlesex County Office Building, New Brunswick, N. J. Merchant & Seidel—architects. Sculptured Pattern FS-100 in 1 $\frac{1}{2}$ " units 18" x 18" was specified in matte black Terra Cotta for exterior facing at promenade and for interior facing in lobby and stairways.



BULL NOSE CORNER

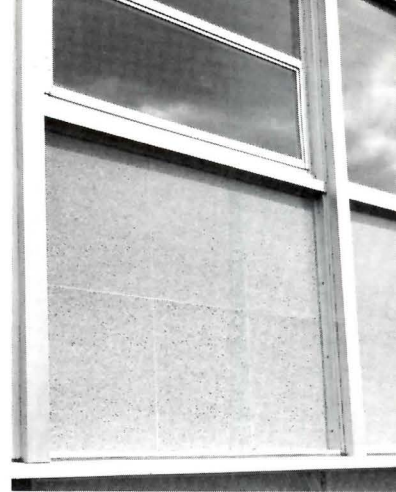
QUIRK CORNER

CV DURATHIN DETAILS





Public School No. 40, Jersey City, N.J. Valdemar H. Paulsen — architect. CV Durathin Insulated Panels in bright mottled blue provide a cheerful and dominant color. All panels are 1 7/8" thick with Foamglas insulation. Specified widths vary from 52-7 1/16" to 59 3/4" while specified heights vary from 17 3/8" to 82-5 1/16".



CV DURATHIN[®] INSULATED PANEL

combines colorful beauty and economy in leakproof curtain-wall construction

DESCRIPTION

Maximum unit size of CV Durathin is 17 3/4 by 23 3/4 inches. Size of panel can exceed the recommended 4 by 8 feet if required. Weight of panel is eight pounds per square foot. Panel in thickness of 1 7/8 to 1 1/8 inches is made with Foamglas insulation with a K-factor of 0.22. If a thinner panel is required, Foamthane insulation with a K-factor of 0.11 is used instead of Foamglas, reducing the thickness to 1 1/8 inches. Panels are made in sizes specified with edges designed to fit the frames as detailed. Panels will be straight and true, with minimum warpage.

RELATED ITEMS

The following items are not included but are listed in other sections of the architect's specifications. (1) Mullions and frames around panels; (2) Gaskets and seals around panels; (3) Beads to hold panels in place; (4)

Installation and setting of panels; (5) Applied finish on back side of panel unless otherwise specified.

Note: Beads used for closures should be completely lacquer free.

Panels shall be shop installed and sealed by curtain wall frame manufacturer whenever conditions permit.

SPECIFICATIONS

Scope: This work includes all CV Durathin insulated Panels shown on contract drawings and described in specifications.

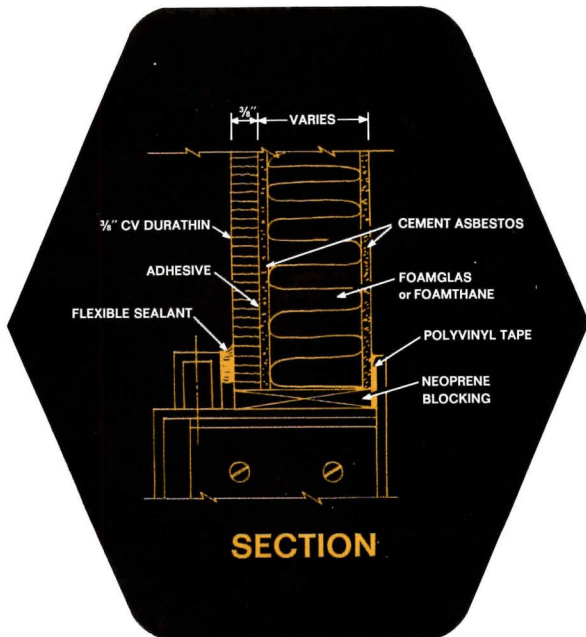
Drawings: Setting drawings showing size of panel, jointing and size of CV Durathin and construction details will be furnished.

Color and Finish: See description of CV Durathin on preceding pages. Color guide brochure will be sent immediately upon request.

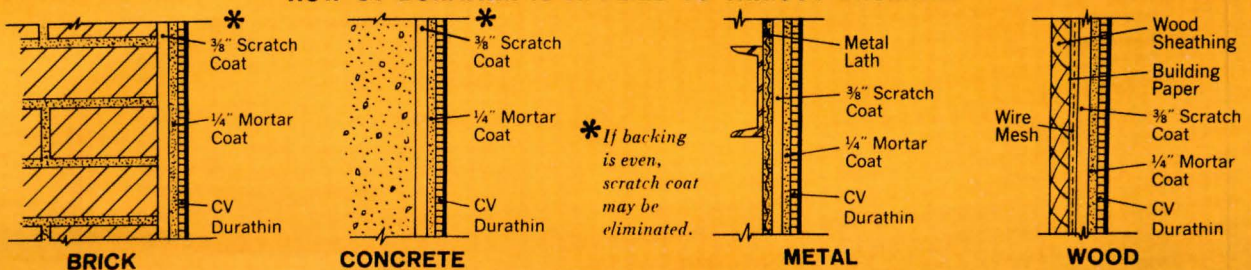
Designs: More than a score of sculptured patterns in the CV Durathin Design Series are available. Special designs can be reproduced to the architect's specifications.

Panel Construction: Panel thickness and size shall be as shown on approved shop drawings. Panel shall be faced with CV Durathin as manufactured by Federal Seaboard Terra Cotta Corp. Core shall consist of Foamglas or Foamthane as manufactured by Pittsburgh Corning Corp. and as shown on architect's drawings and details. Asbestos Cement skins for panels shall be "Flexboard" (type F) as manufactured by Johns-Manville Corp. or approved equal. Armstrong D-218 Adhesive shall be used for bonding. All joints between CV Durathin units are to be uniformly 1/8 inch and are to be finished and sealed with Dow-Corning #780 Flexible Sealant. All four edges of panels shall be sealed and coated with Dow-Corning #772 or General Electric SC-50 water-soluble silicone.

Shipping and Receiving: All panels are to be shipped properly packed for protection and stored under cover, off the ground, in a dry place. Panels are to be stacked on edge to prevent warping or damage to facing, and to be carried on edge when handling.



HOW CV DURATHIN IS APPLIED TO VARIOUS BACKINGS



SPECIFIC - THE PI

These specifications apply to Architectural Terra Cotta and CV Durathin manufactured by Federal Seaboard Terra Cotta Corporation.

DRAWINGS:—Shop and setting drawings, when required, shall be prepared by Federal Seaboard, showing all dimensions, size of joints, as well as all anchors, hangers, expansion or pressure relieving joints which are furnished by others. These drawings shall conform as nearly as practicable to architect's drawings, but are subject to modifications when needed. Drawings shall be submitted to architect for his approval before proceeding with production. Then, when approved, setting drawings shall be furnished to contractor.

MODELING:—Federal Seaboard shall prepare models for ornamental or special-design Terra Cotta units, subject to approval before proceeding with production. Such modeling may also be done by others, under pre-arranged conditions.

COLORS, FINISHES AND TEXTURE:—The architect shall select and approve the texture, ceramic finish and color of exposed surface of products supplied, and Federal Seaboard shall conform to such requirements, subject to normal ceramic variations.

POLYCHROME AND SPECIAL COLORS:—Architect's drawings shall indicate the extent of selection of polychrome, or such two-fired colors as gold, silver, orange and vermilion.

DIMENSIONS:—This tabulation refers only to Architectural Terra Cotta and CV Durathin units as utilized for ashlar facing for which anchored type pieces shall nominally be 2 inches thick, while adhesion type units shall not be over 1¼ inches.

Nominal Thickness	Maximum Net Face Dimension Intermediate size units available	Size of Joint
2"	28¾" x 48"	¼"
1½"	19¾" x 29¾"	¼"
¾"	17¾" x 23¾"	¼"

Dimension from Face of Ceramic Veneer to Face of Backing Wall	Maximum Return	Radius for Bullnose Corners
2½"	3½"	½"
2"	3½"	½"
1"	¾"	3/16"

Dimensions of Terra Cotta when utilized for sculpture are not limited as above. Sculpture, ornamental and molded pieces can be made in larger dimensions.

TOLERANCES:—The following tolerances refer to Architectural Terra Cotta and CV Durathin units as utilized for facing purposes. The exposed face shall not vary from a true plane by more than 0.005 inch per inch for Architectural Terra Cotta, and for CV Durathin by more than 0.0035 inch per inch. The face dimensions of Architectural Terra Cotta and CV Durathin units in the above table shall not vary by more than ¼ inch over or under the approved drawings. Tolerances on grilles shall not vary in face dimensions by more than 0.016 inch per inch.

QUALITY:—Federal Seaboard products are made from selected clays and other materials, carefully proportioned, mixed and fired to produce a strong homogeneous body.

DELIVERY:—After fitting the product to specified dimensions and providing for anchors and other supports, where required, Federal Seaboard shall ship the material, properly packed, to the site. Upon delivery, the contractor has full responsibility for maintenance of the material, which should be stored under cover, and not in contact with the ground.

RECOMMENDED INSTALLATION PROCEDURES

Federal Seaboard recommends the following as sound construction practices in the utilization of Architectural Terra Cotta and CV Durathin. Compliance with these recommendations lies beyond the control of Federal Seaboard, which is responsible only for supply of the material and for furnishing the setting drawings.

MORTARS (TERRA COTTA):—Mortars shall be proportioned by volume and thoroughly dry mixed for anchored or adhesion types of installation. Setting Mortar—1 part portland cement, ½ part high calcium lime putty, 4 parts sand. For exterior work, add 1 quart ammonium stearate or equal for every 5½ cubic feet of mortar.

Mortar Grout—comprises setting mortar with sufficient water added to cause ready flow. Recommended where space between the ceramic units and wall is ¾ to 1½ inches.

Pea Gravel Grout—1 part portland cement, 3 parts sand, and 2 parts graded pea gravel passing a ¾ inch sieve. Recommended where space between ceramic units and wall exceeds 1½ inches.

MORTARS (CV DURATHIN):—Setting mortar recommended is L & M

thin floor mix No. 759 (a complete mortar mix) or approved equal. Scratch coat, if required to level walls, shall be proportioned by volume to 1 part portland cement, 4 parts sand, 1/5 part hydrated lime.

MATERIALS:—Mortar mix should meet or exceed ASA 118-1 standards, and the following ASTM specifications should apply to materials used: portland cement (C150 type 1), sand (C144 type 5), lime (206 or 207 type 5). Mortar should be used within 2½ hours of wetting. Water should never be added to restore mortar workability.

SETTING PROCEDURES (2" OR 1¼" TERRA COTTA):—Tie anchors, if specified and required as indicated on approved drawings, should be installed as setting progresses. At the beginning of each day, wall areas to be faced that day should be drenched with clean water, and again about an hour before setting. Immediately before setting, Terra Cotta likewise should be wetted, and should be noticeably damp when set.

Just prior to application of the mortar, a brush coat of neat portland cement and water of such consistency as to spread evenly, should be applied to the entire back of the Terra Cotta unit to be set and to the receiving area of the wall.

Immediately thereafter, spread one half of the mortar coat over the receiving area of the wall, and one half upon the Terra Cotta. Unit then should be tapped in place on the wall with a rubber mallet, so as to fill all voids completely.

Total thickness of the mortar coat should average ¾ inch, but sufficient mortar must be used to create a slight excess which will be forced out at the joints when unit is tapped into place in wall.

Terra Cotta units must be anchored thoroughly into place where space between these units and backing wall exceeds ¾ inch, and mortar grout should be poured in back of the Terra Cotta units with frequent rodding to insure a solid fill. If the space is 1½ inches or more, pea gravel grout should be used to fill the space.

Voids in open back Terra Cotta units shall be filled with brick masonry as indicated in the setting drawings provided by Federal Seaboard. Non-ferrous anchors or other supporting devices shall be embedded thoroughly in the masonry, and protected from corrosion by incasing in mortar or mortar grout. In concrete construction, loop dowel or other type anchors approved by architect shall be used together with horizontal grooves 6 inches wide, cast in the concrete.

SETTING PROCEDURES (CV DURATHIN):—Adhesion of mortar to the unit and the backing wall is the means by which CV Durathin is held in place. If required, ⅛-inch holes can be provided in bed edges to fasten anchors to backing with ¼ inch non-ferrous malleable wire.

Where backing walls are uneven or wire mesh is used, a ⅜ inch (±) leveling scratch coat (see Mortars-CV Durathin) should be applied prior to setting the CV Durathin units, and, while still plastic, the scratch coat should be scored and scratched.

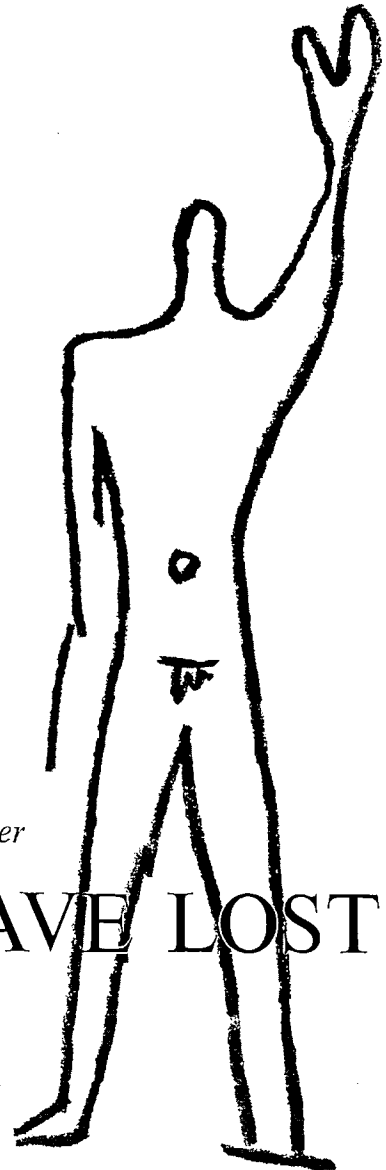
Where backing walls are of concrete, cinder block or brick and are even and in true alignment of plus/minus ⅛ inch, application of the scratch coat may be eliminated. Whether or not a scratch coat is applied, the backing material must be free of dust, dirt or any foreign substance in order to insure proper adhesion. When gypsum or other porous materials are used, a coat of L & M Primer Sealer must be applied. In the setting, the mortar (see Mortars-CV Durathin) should be applied to the scratch coat or backing material using a notched trowel with ⅜-inch teeth spaced ¼ inch apart to provide a ¼ inch (±) setting bed.

Just prior to setting, a thin mortar coat should be "battered" on the back of the CV Durathin unit, which then should be set in the mortar bed by firmly pressing into place with a sliding lateral movement, with care taken to leave no voids. In the setting it is important that the mortar spread on the wall areas should be no more than could be covered with the CVD units during the workable life of the mortar.

SETTING PROCEDURES (SOFFITS):—When applied to soffits, each Terra Cotta or CV Durathin unit, in addition to usual centers and wedges, should be supported by suitable bent wooden shores to exert constant upward pressure until the mortar has been set for several days.

TOOLING AND POINTING:—All surplus mortar and any stains should be removed as setting progresses, so as to leave a clean surface. If pointing is not specified, all mortar joints should be tooled to form a concave joint. If pointing is specified, all mortar joints should be raked out to depths of ½ inch for 1¼ and 2 inch Terra Cotta and to ¼ inch for CV Durathin. Joints should then be saturated with clean water and filled solidly with pointing mortar and tooled.

CLEANING:—Upon completion of setting, all surfaces of Terra Cotta or CV Durathin units should be cleaned with soap or washing powder, then rinsed thoroughly with clean water. No acid or metal scrapers shall be used in cleaning.



Remembering Le Corbusier

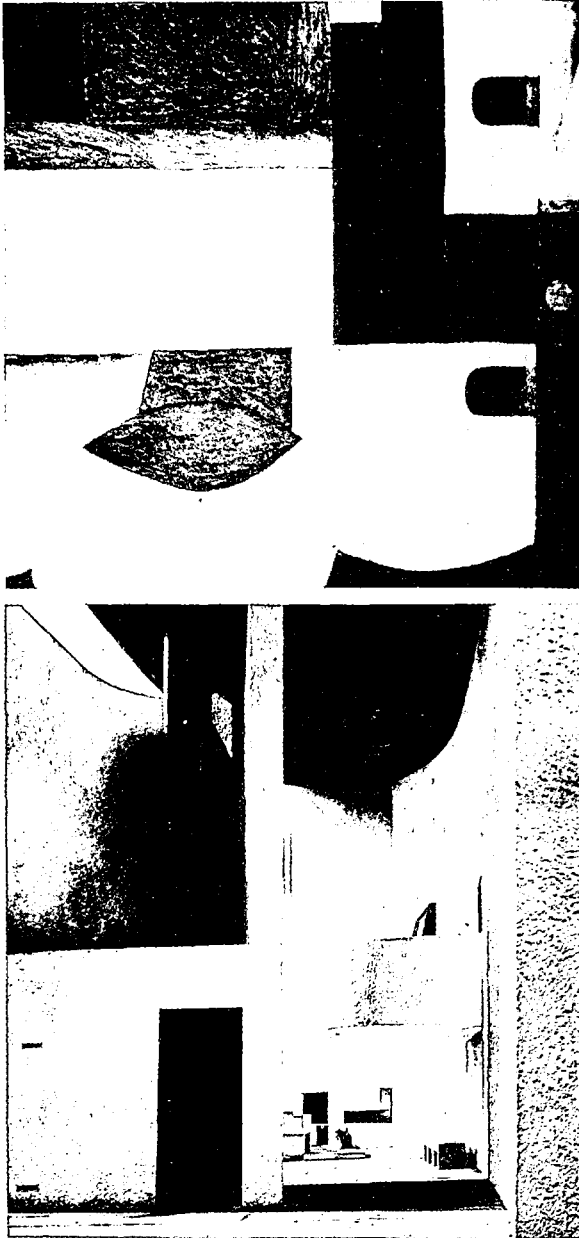
WHAT WE HAVE LOST

BY JOSÉ LUIS SERT, FAIA

SINCE THE END of World War II, Le Corbusier has come into the foreground as one of the greatest men of our time. He was known to comparatively few people before then. This relatively recent recognition of his greatness is due mainly to the enthusiasm he awakened in the younger generations, not only in Western Europe and the United States but in Latin America, India and Japan.

While visiting new buildings and schools of architecture in a world tour two years ago, I was able to measure the breadth and depth of Le Corbusier's influence. He was without doubt the most imposing architect and city planner of our time; only Picasso's name can be matched with his in widespread reputation in the world of the arts.

Why did recognition of his merits take so long? Mainly for two reasons. First, because of the great opposition directed toward his ideas and buildings by the established authorities controlling city development. And in this same vein, because many people could take only superficial changes in architecture that would not affect their bourgeois way of life. Second, because Le Corbusier was the worst salesman of his own work. His inflexibility, one of the



The forms of an early painting (top) are suggested in the sculptural quality of Ronchamp Chapel.

causes of his great triumph and one of his greatest virtues, was not helpful in making friends or getting commissions at the start of his career.

Le Corbusier was a man absorbed by his own ideas in which he had the greatest faith. He could talk for entire days about what was shaping in his wonderful mind. He sounded obsessed to those who could not follow his thoughts or did not share his interests, but he convinced from the start those who were trying to explore, without prejudice, the same fields. His wife and wonderful companion, Yvonne, had the difficult task of bringing his mind to other subjects, sometimes shouting at him, "Pas d'architecture apres six heures!" He would then laugh, relax and drop the subject.

He enjoyed the company of simple, sincere people who knew nothing about architecture or modern art. He merely talked to them about life and its simplest pleasures, "les joies essentielles," which in his mind were the key to a better and healthier architecture. While in Bogota, Colombia, discussing his new master plan with the public authorities, he took some time to talk about the city with the maid who came to straighten up his hotel room. He wanted people like her to become aware that the new plan was supposed to work for the benefit and greater happiness of *every* citizen.

He was convinced that modern science and technology in the hands of the artist could make important contributions toward a better world. Like all real believers, Le Corbusier was a bit of a preacher; he wanted others to share his wonderful visions of this better world.

When you understood what he was trying to do and when you showed interest in his work, he reacted with warmth and friendship. He was like another student with his assistants in the Rue de Sevrés. Those of us who were there some time in the course of the last 40 years remember how much he would give of himself and how he would explain and joke with us like another inexperienced man. He was one of the group, always trying to find new answers to entirely new problems. In a heated discussion about form and function with one of his assistants, he kicked a wastebasket, which took an awkward, distorted form. He recognized that in its new shape it was easier to throw papers into the basket, but he told the man, "You see, it is more functional, but it looks like hell!"

While visiting the Swiss Pavilion in the Cité Universitaire in Paris on a warm summer day, he asked the man in charge how he felt. The man said

it was uncomfortably hot; whereupon Le Corbusier told him, "You should go and live in my Marseilles apartment. I designed this building using 'sun breakers' and found that you can get all the views you want and no heat—it's marvelous. I don't know why I didn't think of it before!"

Le Corbusier never got involved with small matters; he was only concerned with big issues and naturally reacted violently to people who could not understand him or wanted him to compromise his ideas. He was not a difficult man unless you opposed him without trying to understand him, and his broadmindedness made it difficult for people to follow his thinking.

He was a generalist and, like all great men, he was far ahead of his time. An architect and city planner has to be a generalist by nature. This type of man will be in increasing demand. We are possibly moving toward the period when specialization as we understand it today will not be as necessary; when synthesis and coordination (interprofessional included) at all levels will be required to put our physical environment in some kind of order.

His small vest-pocket notebooks were packed with big ideas and lively sketches. Whenever something interesting happened or some problem presented itself, he got out his notebooks. He had a wealth of ideas to draw from.

Those who believed him difficult to deal with and who failed to understand him remain the losers. His mind did not open to them, and it is difficult to appreciate the qualities of his work without understanding what he was trying to accomplish. The losers are also the countries and the cities that could have had more examples of his work—those who doubted his capacity and talents—and the public authorities who were afraid of what the public would say. France is indebted to Claudius Petit [and Raoul Dautry] for the Unité d'Habitation in Marseilles and Nantes and to Pere Couturie for the Ronchamp Chapel and the Monastery of La Tourette.

The United States has only one Le Corbusier building, the Carpenter Center for the Visual Arts at Harvard University.* It is because of this institution's willingness to experiment and its support of advancement in all fields of knowledge that the structure is here. The Carpenter Center is a small building, but like some others of the past, it may prove more epoch-making than many large ones. When Le Corbusier learned of Harvard's interest

in his designing this building, he expressed disappointment in "getting such a small commission from such a big country," but when the program of the building was submitted, his interest heightened; for the building was to be concerned with experiments in the visual media and would bring together people from many countries to share the thrills of discovery and visual communication. He pictured it as full of life and answered, "I'll take it." The building is lively and shows Le Corbusier's interest in what is happening inside. He once described it as the "meeting place of head and hand."

The fortunate ones in getting Le Corbusier's works are the newer countries with fewer barriers and less red tape. Brazil encouraged his followers in the 1930's and kept contact with the master through the years. India trusted him (mainly because of Nehru's foresight) and gave him a new capital center, Chandigarh, to design. It is here that his greatest works face one another across spaces also measured and designed by him. This is the only existing example of his work as an urban designer—just enough to show us what his genius could have done had he been given more chances.

A while ago in Zurich at his publisher's, I paged through the dummy of the seventh volume of his complete works. His mind was as young and inventive as ever. Much of what is in that book is not yet built; some of his greatest masterpieces are still on paper. May we hope that the necessary courage and faith will now be available to make them a reality. Better late than never.

It was reassuring to see in the last meeting of the International Union of Architects in Paris that examples of work of architectural schools around the world follow his lead and directives. The USSR and countries of Eastern Europe, long diverted from this road, have now joined the other nations showing work where the spirit of the great man is the animating factor.

Le Corbusier's spirit stays with us. The younger generations of architects will carry out, I am sure, some of his dream. The results will not be the same as if the great man himself had seen them built, but great dreams take generations in becoming realities. I hope he has left us with a feeling of confidence that his gallant fight has not been lost and in times to come, many people will be grateful for his significant contributions to humanity. ■

* Sert, Jackson & Gourley were collaborating architects on the project at Harvard, where the author is dean of the Graduate School of Design. Originally prepared for *Le Figaro Litteraire*.

*'To bring forth and preserve,
to expand without waste,
to create without the desire of possessing,
to act without hope of reward,
this is the supreme virtue.'*

LAO TZE

Changing Ideals in Architecture

BY GEORGE PETER KELETI, AIA

AMONG THE FINE ARTS, architecture is the first to react to any change of attitudes and ideals in our society's evolving cultural patterns. More often than not, the expression of this evolution is reflected in architecture before it can be verbally defined by our philosophers; not because of the brilliance of architects as intellectuals but because of the inherent relationship of architectural expression to the daily life of our society. So, when we talk about the changing ideals in architecture, we are concerned with human ideals.

Architecture today continues its constant search for style. The pace of this search is perhaps more restless than it has ever been, as the various layers of stylistic development pile on one another before the public has a chance to adjust to any of them. The old ideal of the architect developing a personal style is obsolete. Those well-known architects who insist on continuing to clothe their buildings with the same distinct style only succeed in identifying their names with particular moments in the evolution of ideals. What then is this shift of ideals which is bigger than our individuality?

The rapid-fire sequence of architectural fashions which we have experienced since the days of disillusionment with the eclectic historical styles is in

direct relation to the development of philosophy. Any progress made by our philosophy in the practice of life, even without theoretical justification, seems to have an immediate effect on our architecture. The consciousness of rapid cultural changes dating our work should not mean that it is futile to search for eternal values. This apparent contradiction is inherent in the duality of attitudes of science and art within our architectural thinking at this time.

Science, in its search for truth defines, redefines and constantly strives to approximate the factual with the theoretical. Art, in its effort to present truth, strives to create a convincing image of reality. The artist has to present a conclusive image to consolidate the cultural gains of philosophy. The masterpieces of the past survive due to the integrity of thought that produced them and to the specific human values which, at that time of cultural development, seemed significant enough to be a theme of artistic expression. If as artists we succeed in capturing these values in their most intense and pure form, we will have created a masterpiece of eternal values.

It is in this sense of being the barometers of the trends in the appreciation of human values that the artists become the conscience of society. It is unfortunate that there seems to be a contempt for the

artist which tends to stamp him as a nonproductive free-rider. Yet the artist is a means to secure our cultural survival and the instrument for the coordination of its values. These functions are not being fulfilled in the house of philosophy, and the most urgent task in cultural survival has fallen to the artist and the architect.

What can an architect do about the development of ideals and the appreciation of the values of human experiences? How can he exert a cultural leadership of so great a philosophical consequence as to solve problems which the philosopher himself has failed to solve? Art is expression. Through our esthetic selection we express our conviction with direct forcefulness in a conscious manner. Let us take one of the latest trends in architecture which, in deference to Eliel Saarinen's Helsinki Railroad Station, I shall call neo-brutalesque.

This new style of modern architecture is consciously and often self-consciously choppy in its forms. It indulges in roughed-up textures both inside and outside the building. It also denies the expression of ordered space by systematically breaking up rhythms even when these are dictated by the plan. The new style often superimposes an order which is extraneous to the function of the building. Through all these manipulations of formalism, the new style is faithful to only two effects:

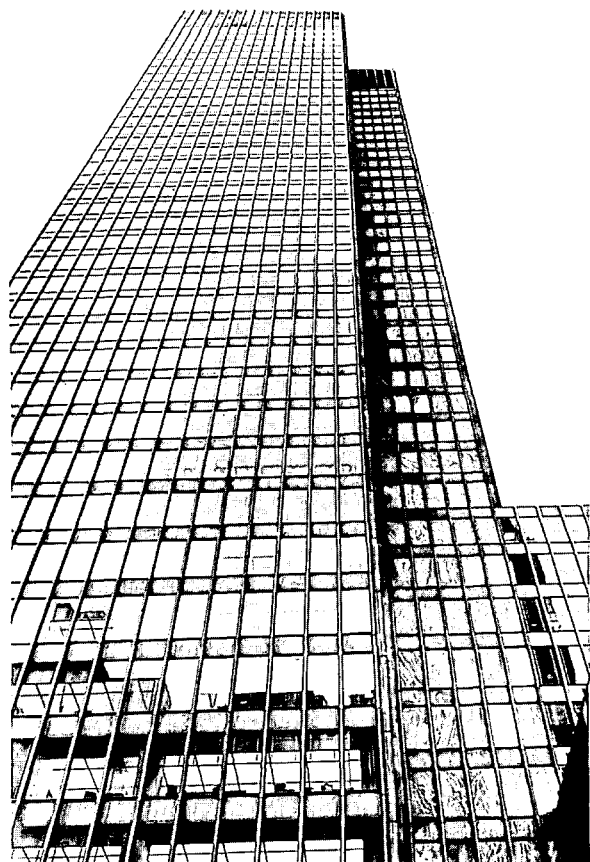
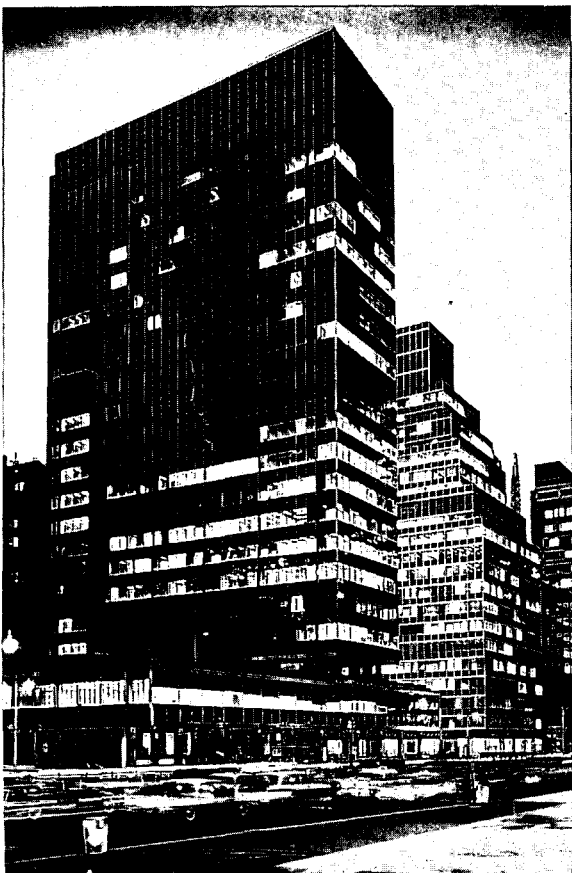
It strives always to be decorative and to create an odd, exaggerated scale. None of these features of neo-brutalesque architecture is without philosophical implications.

It is one of the peculiarities of artistic expression that monumentality cannot be achieved by directly striving for it. Monumentality is the result of human greatness which somehow cannot be faked or forced. A direct striving for the effect will result in the brutality which permeates neo-brutalesque architecture.

The expression of choppy, bulky and clumsy forms is new in architecture. It is in direct contrast with the thin and delicate detailing so prevalent a mere 10 years ago. In revolt against conformity, the juvenile feels the need to assert his ego by smashing glass. In his revolt against pressures to conform, the architect falls into a pattern of using forceful and brutal forms. The cause of free will is asserted by going against structural common sense, by making upper floors project progressively farther out from the base of the building. It is asserted by denying order and juggling odd openings in random patterns. And somehow this revolt is tolerated in art.

This tolerance is new in our age. It is not yet a matter of principle inspired by the experience of earlier oppression. We have learned to admit that

New York's Lever House (left), by Skidmore, Owings & Merrill, and the Seagram Building (right), by Ludwig Mies van der Rohe FAIA and Philip Johnson FAIA: "Particular moments in the evolution of ideals."



there are systems of values other than ours. As we grow in understanding, these values are gradually grouped into coherent clusters in our mind. These groups stand on their own, unrelated and often in contradiction. We even strive to display an equal appreciation of these other values instead of merely practicing tolerance. It is in this manner that the puritan attitude of condemning the sensuous has become so distinctly obsolete. The rediscovery of the sensuous and forceful primitive feelings, and a contempt for the rationalism which restrained them, are the moving forces behind the artistic expression of the neo-brutalesque style.

The rich textures of today's architecture are the symbol of our sensuousness, which represents our appreciation of the values of "sheer existence," a first universal category amply defined by Charles Sanders Pierce, the founder of pragmatism. To maintain a sense of continuity in the midst of choppy forms, the new brutalism resorts to decoration. Through decorative effects we display our wealth and our ability to control our environment, symbols of values of a second universal category. In the coordination of random and subtly inter-related patterns of a third universal category, there is a sense of discovery and rediscovery at the expense of traditional values of order and self-discipline.

All these categories of thoughts are present in our cultural pattern. Architecture is the most articulate in expressing them. But can we architects

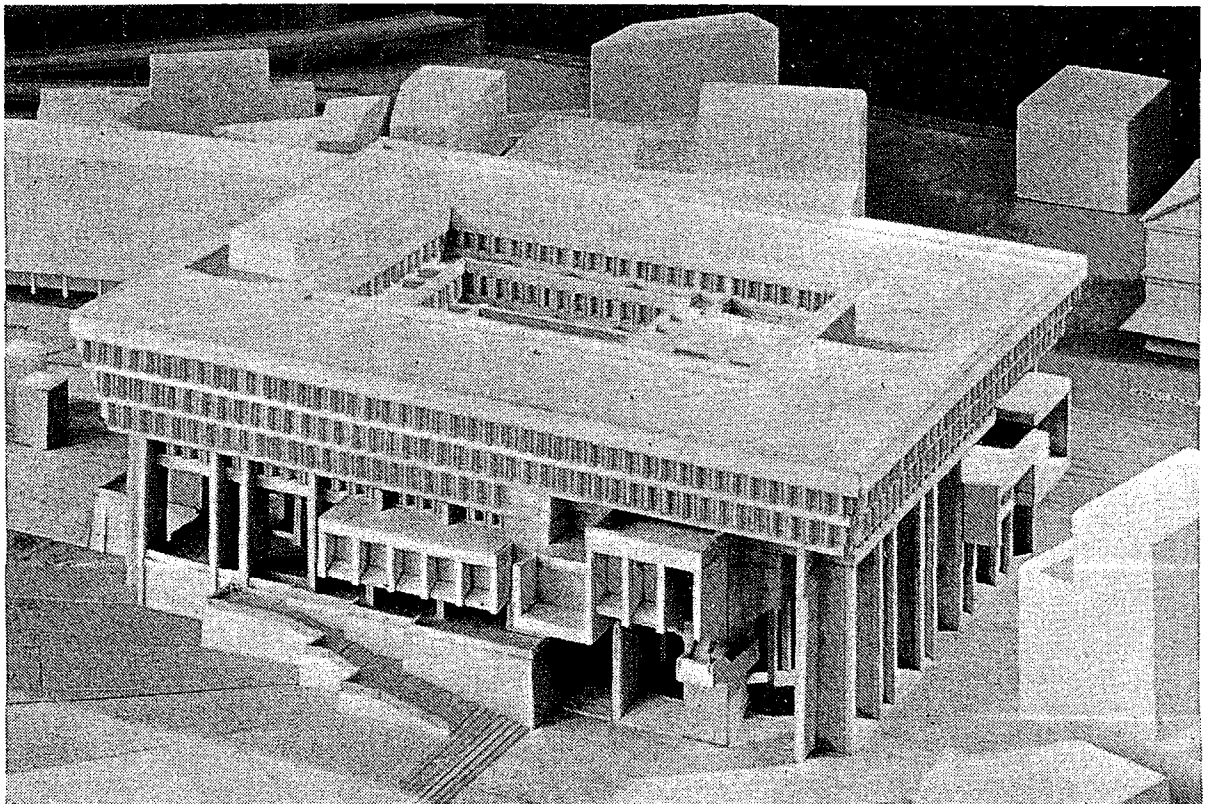
create masterpieces describing human values while attempting to influence their evolution?

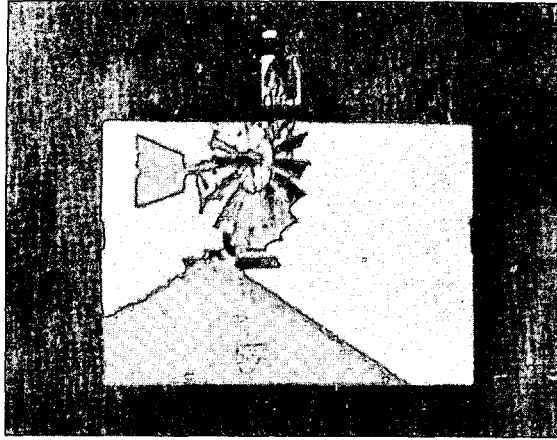
The evolution from the Romanesque architecture, which expressed man's fear of God, to the Gothic expression of man's desire to lift his heart to God is a clear example of architecture leading the way toward a new philosophical concept. Yet the masterpieces of the Romanesque-Gothic periods are the ones of pure conception and not among the ones of the transitory period. The art which is significant in search is hardly ever successful in producing the most definitive and conclusive in expression; whence the source of the double standard of judgment in art history. For the art historian, the transitory period is more exciting since it shows more of the creative process. For the nonspecialist, the masterpiece has more to offer, while the transitory work of art has only an exploratory value. We may credit the artist as the one who paves the way for cultural progress, but once the cultural reference points have been established, it is needless to repeat the experiments.

It is in this sense of consolidating our cultural gains that progress in philosophy is now so urgent for the further development of architecture. Modern architecture has succeeded exceptionally in contributing to the cultural climate in which we live, but it needs more balance and appropriateness and a wisdom to guide it toward greatness. ■

Adapted from an address given before the Kansas City Chapter of the Torch Club, a professional men's organization.

Boston City Hall, by Kallmann, McKinnell & Knowles: "Neo-brutalesque . . . indulges in roughed-up textures."





Our Unpretentious Past

BY AMOS RAPOPORT AND HENRY SANOFF

INDIGENOUS architecture has provided a heritage and an ideal beyond the generation of its originators. It typically represents infinite variations within a consistent order and framework, warranting our particular focus and reexamination because, in our complex and multilateral society, we need to encompass infinite variations within a strong, consistent ordering framework. Variety must manifest itself through a synthesis of environmental considerations which are translated into physical forms.

For us in an era of conspicuous obsolescence, an era denying this historical profundity, vernacular architecture inherently implies a response to a series of functional requirements—before functionalism became self-conscious and before change for its own sake became intellectually fashionable. Our present architecture appears to reflect an intimidation of the users of a building through an imposition of its presence. We strive at great expense to conceal many of the intrinsic elements of architecture (1). The fear of being accused of obscenity results in a superficial esthetic which generates a static machine rhythm upon a culture of complex organisms.

It is quite evident that the barn is symbolically reminiscent of the past and represents an attitude of optimism and romanticism, a spirit virtually nonexistent today. Our admiration for barns and other vernacular structures is, however, far more significant than romanticism. Authenticity at every level is individualistic and independent in contrast to the debased contemporary that shimmers in aluminum. What has replaced it is not native to a native concept. An investigation into our past may recall pertinent and meaningful statements which have been ignored during our period of technological acceleration. Through a command of limited materials and structure, the early American settler displayed an ability to satisfy climatic

requirements and created a native architecture logically rooted.

The California farmstead is typical as a monument to the indigenous architecture of America and reveals a homogeneity

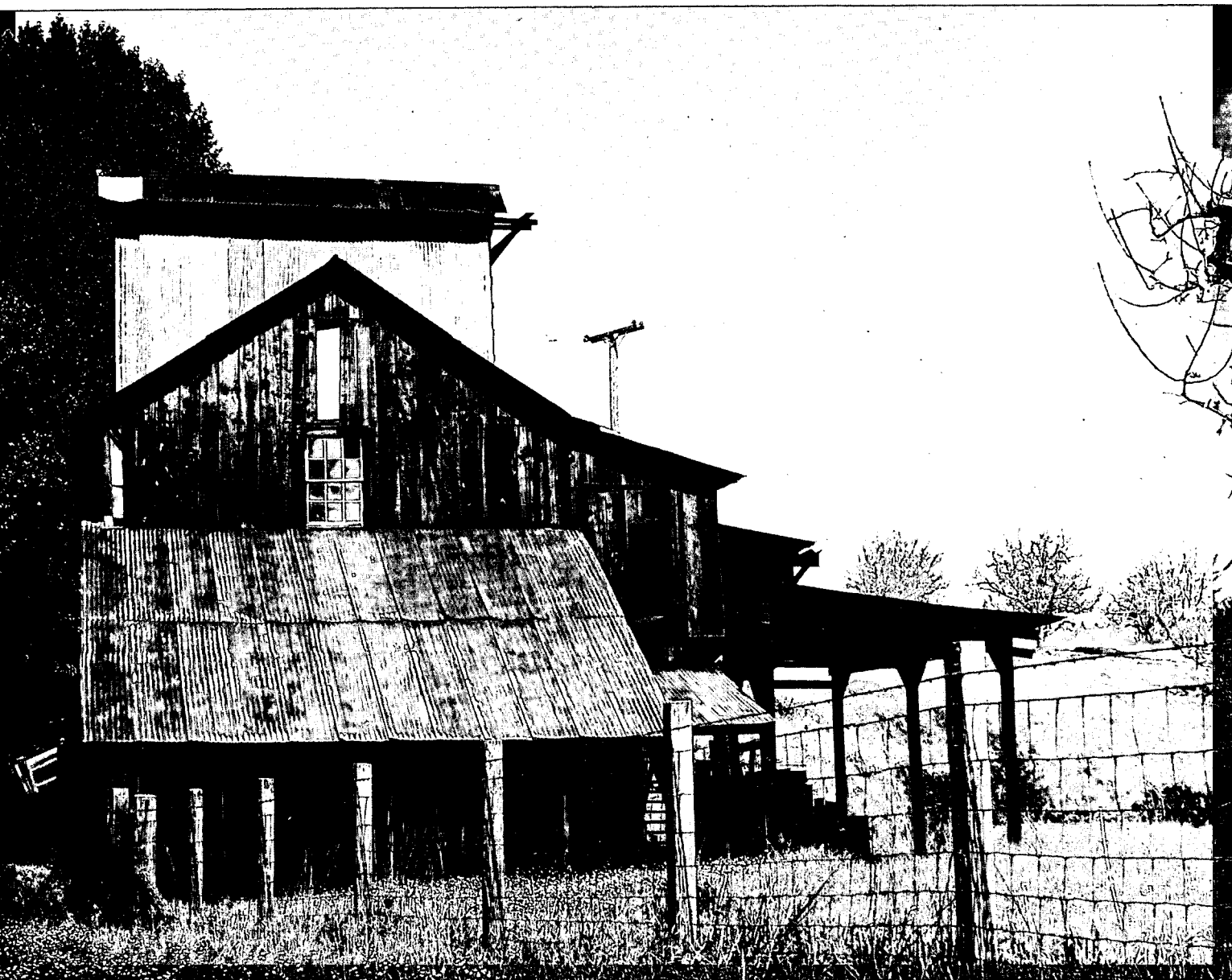
of approach to the demands of site location and environment, while allowing for the great variety of local considerations. Specific requirements shape the forms, but within the given environmental constraint, numerous variations occur due to micro-conditions. Paradoxically, the barn symbolizes a utility in a context of alterations. Today, one sees a modern boxlike farmhouse displaying its ornate vulgarities juxtaposed with its humble predecessor, the barn. Presumably, man has reconciled himself to a physical environment inferior to his produce.

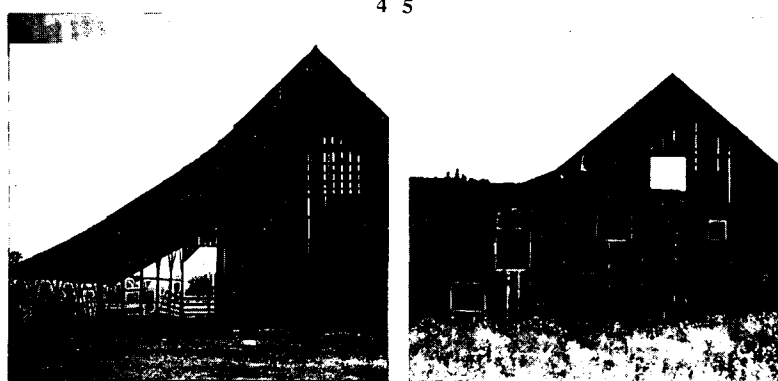
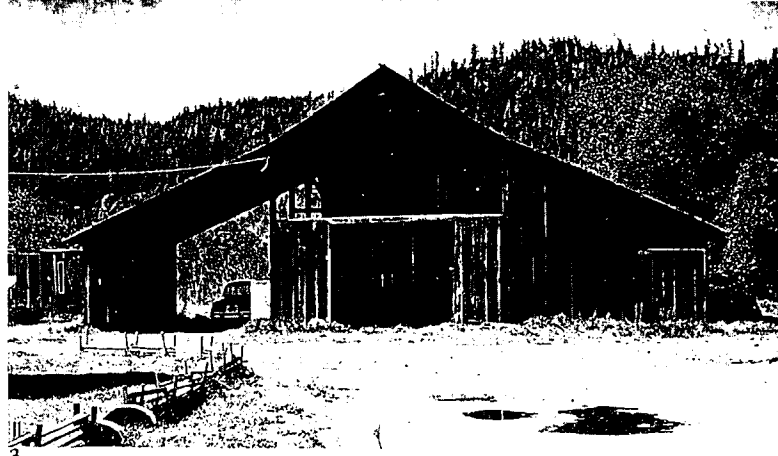
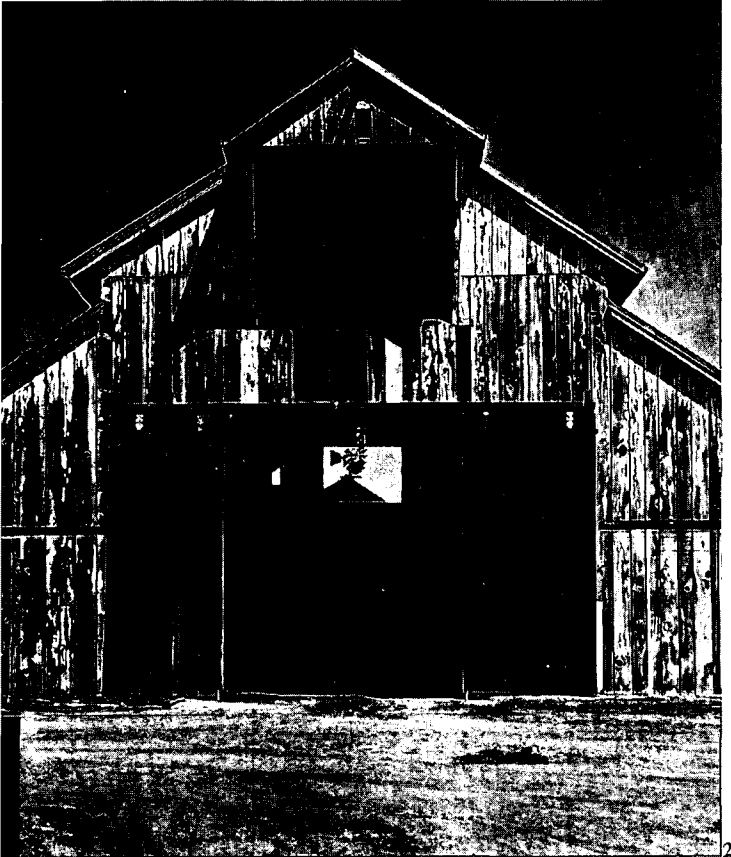
The barn as a traditionally rural form has a sense of place (nongeographical, functionally organized) in its particular rural environment, exemplifying an ordered marriage of relationships. Today's farmhouse has been converted to a suburban form, severing the traditional relationships and meanings that led to its fruition. It has lost its possession of place in the rural landscape, symptomatic of the current destruction of boundaries.

Unlike our present contemporary anonymity which has defaulted and become unprincipled, a violation of basic integrity in its misuse of materials, ignorance of climate, concealed or over-aggressive structures and often meaningless form, indigenous architecture has been intimately related to its environment. In vernacular architecture, structure maintains its place in the total order at the particular technological level of its originator (7), thus contributing to the final synthesis of the solution.

The structure is not concealed, nor does it become a dominant element or end in itself, as it has done in periods of romanticized technology during the development of modern architecture. Framing systems were determined by the span

Anonymous
architecture of barns
reflects an order of
our natural environment
which is increasingly
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and discarded
by contemporary
technology





necessary and the availability of lumber, and expanded or modified systematically as the function varied.

Materials were selected for longevity, not just for immediate efficiency and function. Those requiring minimal maintenance and durability have contributed to the visual quality through their ability to withstand deterioration under climatic stresses. Redwood used in vertical boarding or shingles is most common along the rural West Coast, reflecting the abundance of the indigenous forests and the existence of a tradition of how to use the materials. In the farmhouse much was done in the interest of economy, and a certain pragmatic standard of strengths of building materials was established which acted on the side of virtue.

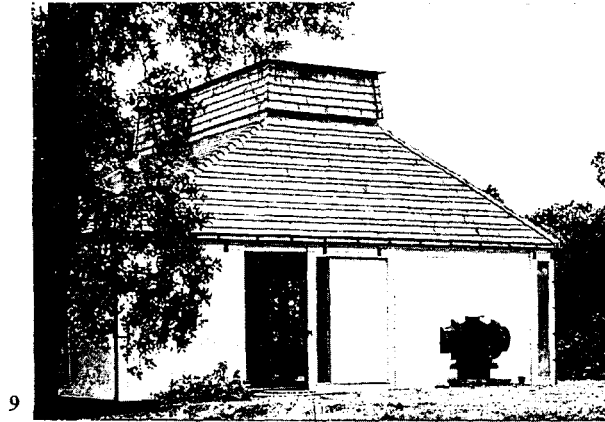
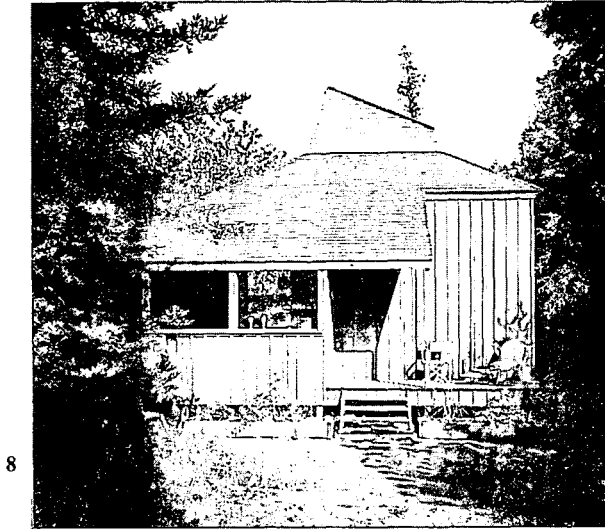
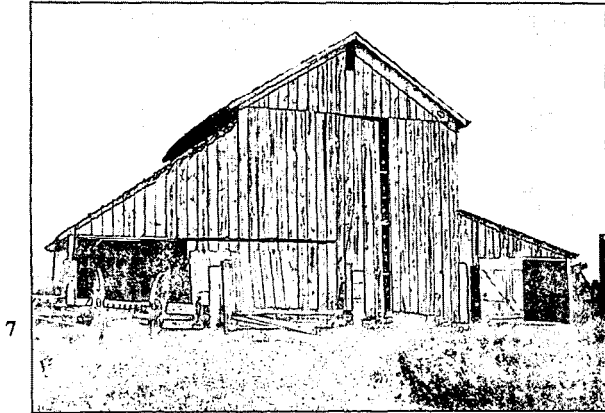
The relative variation in forms directly relates to their intended function, with successful and numerous combinatorial relationships derived through logical and workable solutions to basic requirements. The physical building configuration reflects the interior volume and begins to identify activities from within. Generally one finds a complex relationship of building elements consistently retaining its completeness (1). Basic to vernacular American barn architecture is the plane surface which is ill-suited to interruptions in its flat expanse and discourages the use of applied ornamentation. The use of the plane in conjunction with the functional requirements for large openings results in extremely subtle and sophisticated solid-void relationships (2, 3). Breaks in plane are

logical and consistent, resulting from a coherent articulation of materials and structural members or the expression of major volumes and spaces.

The planes seen from inside have considerable perforations due to the many types of openings required for ventilation and the prevention of condensation. The eye penetrates to segments of landscape through the voids, which spatially order and unite the structure and site. This ability to perceive abstractions of the surrounding environment (3, 4, 5, 6) has been discarded essentially in contemporary architecture.

Planning and massing of building groups are the result of specific requirements logically resolved, indicating well-articulated relationships within similar environmental constraints. The organization of the rural farmstead complex is one of harmony with the landscape. Within the context of heavily wooded areas, the complex defines itself in a clearing. In a cultivated landscape, the complex is defined by its own grouping with an additional vertical massing of shade trees, often providing a windbreak. Anonymous architecture of barns reflects an order of our natural environment which is increasingly being repressed and discarded by contemporary technology.

The anonymous farmstead enables one to contemplate the need for perpetuating a tradition of valuable building. When viewing the farmscape with its various components juxtaposed against one another in their temporal landscape, one must be cognizant of how little of this agreeable quality has manifested itself through conscious effort. This



organizational unit of buildings was in obedience to needs, materials and a peculiar sense of what seemed right.

The perpetual traditions of buildings in primitive areas by indigenous people who have established a supreme order of architectural sophistication seem to have vanished in contemporary architecture, as traditionalism has vanished from our culture. Our contemporary architecture appears to be regressive. Technology has been exploited for the creation of artificial obsolescence, which has obscured our moral responsibilities. The industrial revolution has provided the tools with which to develop an architecture of reason, yet the results are the classical forms in pseudo-contemporary materials that are typical of most American building. Our advanced technology has provided us with the facility for altering our internal environment indiscriminately, irrespective of culture and climate. This universal physical environment that is created denies the existence or need of the varying cultures and heritage of man to influence our respective development. Universal technology has created universal space and constant environment which abrogates the notion of place and its boundaries.

Only through a confluence of the users' needs and desires can architecture be restructured to respond to and unify its environment. For a renewed discovery of the significance of our rural building inheritance, one must view the unfamiliar, close to the weathered boarding until the grain and the shape, as well as the total form, become visible.

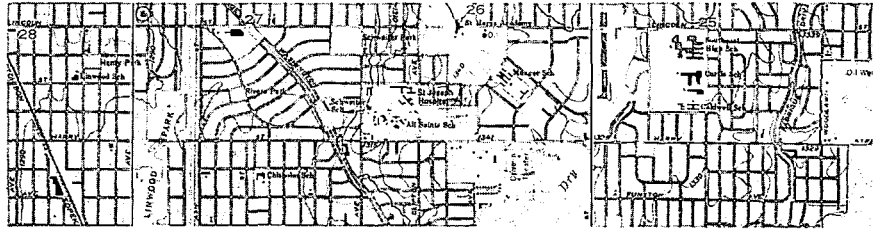
Selected as typical of western areas are barns that appear to have a great level of achievement within their own formal context. The purpose is not to proclaim a panacea but only to re-reveal aspects of our heritage which appear to have been obscured and consistently neglected. Continued examination will help to develop attitudes about various other regions, native concepts, native materials and forms, and their relationship to the landscape.

The examples are indicative of a creative statement in structure, environment and form, and provide an opportunity to assess our own idiomatic architecture, which must satisfy a more complex task concerning human response and behavior.

The vernacular influence can be observed in examples of contemporary architecture of the San Francisco Bay region and its environs, in the work of Moore, Lyndon, Turnbull & Whitaker (8, 9) and others who are concerned with the establishment of a special place around which the form progresses. ■

ED. NOTE: A good many readers undoubtedly have their own favorite barns to add to the selection made by the co-authors, both assistant professors of architecture at the University of California. The AIA JOURNAL welcomes such contributions for possible use in a future essay. Photographs will not be returned unless accompanied by a self-addressed envelope and postage.

URBAN DESIGN WORKSHEET 3



PREPARED BY PAUL D. SPREIREGEN, AIA, FOR THE COMMITTEE ON URBAN DESIGN

Guidelines to Job Development

How does an architect get into urban design? By knowing, for one thing, the design implications—and possibilities—of what is happening in town. By remembering, for another, that every US community can benefit from urban design. By being prepared, for a third, with the necessary tools to do the job. The working equipment described here is based on an outline developed by Donald H. Lutes AIA.

I. General Requirements—the firm must:

A) Enjoy a good reputation, which is basic to any commission.

B) Have a record of quality work.

C) Have—or be able to assemble—the technical proficiency to do urban design; also be able to show his client, public or private, what urban design is, what it can do for his project and how it supplements or coordinates all other planning efforts.

D) Be able to work with a corporate or group client, public or private.

E) Be able to meet schedules.

F) Be able to produce good graphic material: plans, perspectives, sketches and models.

G) Be able to work with other specialists, and often to help select them; be able to comprehend, evaluate and synthesize the ideas of these specialists.

H) Be able to conduct or be part of a wholesome team effort.

I) Most important, be able to discern the urban design possibilities of any particular project, which almost always involves broadening

the client's program—enlarging the vision of the entire undertaking. In almost every case the project will have arisen out of the recognition of a few specific problems. Often the client's idea of the solution will be narrowly conceived. The urban designer must see the problem in its whole urban context.

J) Understand the extremely complex process of urban development, economics, law, real estate, etc. All these factors will tailor the design in some way or other. Be able to work with all of these "inputs."

II. Urban Design Commissions—how to start:

A) Develop the urban design implications of every architectural commission. A single building is not urban design, but every building has urban design implications—particularly in its relation to site, to neighbors, to circulation and its appearance in the urban setting.

B) Seek commissions with definite urban design implications. Examples of these are:

- Residential developments
- A development with a mixture of high-rise and low-rise or a mixture of building types
- A high school in a neighborhood
- A shopping center, particularly with links to noncommercial uses
- An industrial park
- A difficult and complex site problem
- A project built in stages
- Problems of highway location and design, particularly where they approach the city and when they cut through existing urban tissue

- Transportation terminals and interchanges
- Several buildings being developed by individuals which together could form a distinguished group
- Civic buildings which could form a group
- Civic plazas, public spaces, sidewalk design, street furniture
- All works of municipal engineering: landscaping the municipal sewage plant, for example
- Transportation route location as well as appurtenances such as bridges, signs, appearance, vistas to and from
- Studies of the sectors of a city created by a proposed highway network
- Parking garages in relation to traffic patterns
- Open spaces and parks
- Low-income housing, particularly that which is blended into the community, rather than inserted as "projects"
- Block and neighborhood rehabilitation studies
- Playgrounds
- Historic preservation work: restoration and remodeling with emphasis on the creation of appropriate settings
- Projects which tie into local efforts to aid the underprivileged and economically depressed
- Hospitals, particularly site studies for growth
- Campus design
- Shoreline redevelopment
- Reclamation of obsolete urban areas: old industrial areas, railroad yards, docks
- C) Become involved in community affairs. Most architects do have

a fair grasp of what's going on. However, they are generally oriented toward interests which lead to architectural commissions: school construction, speculative building, land development.

This interest has to be broadened to embrace a wider range of community interests: an open-space program, siting of major public buildings, a community's redevelopment effort. Interest in building activity leads to building commissions. Interest—and participation—in community activity can lead to urban design commissions.

III. Allied Professionals—working with others:

A) Every architect who has ever put up a building has sought particular technical advice from other professionals: a structural engineer, lighting consultant, cafeteria consultant, etc. Obviously a city requires a considerable range of expert opinions for its redevelopment.

An architect as an urban designer will have to understand and be able to work with many other professionals. Sometimes he will be the leader of such a group; at other times he may be called upon by one of its members to participate in a going effort. In any case, he should be aware of the talents and contributions of the following, some of whom will be in private practice, others with government agencies:

Traffic engineers; real estate consultants; public school officials; civil engineers; water and soils experts; economists; sociologists; library consultants; renewal experts; and business group representatives and committees, ordinarily working through an ad hoc committee.

Also the banking and mortgage fraternity; representatives of underprivileged groups; police and fire departments; the city planning commission staff; the local redevelopment authority, usually separate from the city planning commission staff; landscape architects; and zoning experts.

B) The advice of such professional colleagues makes available a full technical range. This kind of team effort will take the following elements into consideration:

Planning; zoning; traffic; public works; public welfare programs and aid to the underprivileged; capital budgeting; municipal administration; design controls and regulations; conservation.

IV. Understanding Your City—you must:

A) Know your city, just as in

designing a building, you must know your client, including his whims. But in urban design work, the "whims" are generally hard-frozen policies that you encounter, for example, in getting approval from the traffic department to improve a sidewalk.

B) Know your city's history, how it got to be what it is, where it stands in its regional economy and what its future is likely to be.

C) Know, too, who the chief decision-makers are, who the most influential groups are and what their interests are. Urban design has to be put into a context that means something to them. They must be shown the need for bringing in less influential but, nevertheless, important groups. The decision-makers can lead, but their plans can be blocked by the second or third echelon of community organizations and interests. Persuasion remains a most satisfactory strategy.

D) Know your city's problems, including the skeletons in the closet.

E) Keep abreast of new ideas and new approaches to civic problems as well as design.

F) Know your civic government and how it works. Know the problems of governmental overlapping and the several levels of governmental authority. Know, as Harry Truman put it, where the "buck stops."

G) Know your town's planning history—its successes and failures and the "why" behind both. It is amazing how smart some of our ancestors were.

H) Know the ideas of others. Someone with a long-standing idea can become a close ally when he sees a possibility for realizing his pet dream.

I) Know the efforts of land taxation and the real estate market in town. Know the problems of land shortage for particular land uses (like low-income housing) and the way that zoning sometimes underlies the shortages.

J) Keep a running inventory of your town's main problems, their sources and possible solutions of all sorts. Always try to see the urban design implications and solutions for these problems.

K) Most important of all, for any possible project, be sure that you clarify the separate responsibilities of public and private action. Public action will include public works: roadbuilding, public utility lines, relocation, renewal, etc. Private action at a large scale in a problem area is usually impossible

without prior public action. Each depends on the other and needs careful coordination, lack of which can result in the early demise of a project, if indeed it ever gets started.

Coordination in small doses is needed to take even the smallest baby step. Within the public and the private sphere are innumerable opportunities. Beware of token coordination efforts which merely amount to avoiding stepping on the other department's—or company's—toes. Real coordination is a serious business. Here is where your town's true leaders fill one of their major roles.

V. Know your own tools—you must know:

A) Your own job.

B) Ways to use the skills of others.

C) Procedures which can be used for redevelopment.

D) Roles to be played by public and private sectors.

E) Roles of the techniques employed by redevelopment procedures; control mechanisms; financing operations; government aides; public and/or private land development and redevelopment corporations; outside developers; news media; and civic groups.

VI. Contracts and proposals—you must:

A) Expand on the experience of your small jobs as the basis for larger ones.

B) Develop detailed proposals of what you will do and how you will do it. Base them on the scope of the job as you see it in its broadest terms but divided into digestible parcels of work. Budget for them adequately and realistically. If the "parcel" is for a specific and familiar piece of work, set up a fee accordingly. If it is for unfamiliar work, use a time-cost basis, perhaps with a maximum figure.

C) Be able to renegotiate contracts when new circumstances or requirements become evident.

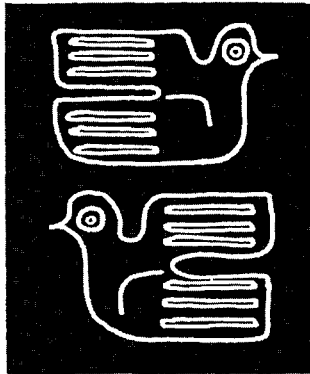
D) Build your design team around people with whom you have previously worked. Use reputable consultants. Seek to use new talent of promise. Nothing beats experience coupled with integrity. But equally constructive and helpful in your effort will be the talent of a promising newcomer who seeks to demonstrate his abilities. ■

ED. NOTE: For a glimpse at how the architects of one medium-sized city have put these guidelines into effect through collaboration, see the following pictorial essay on Eugene. The firm of Lutes & Amundson has its offices in neighboring Springfield.



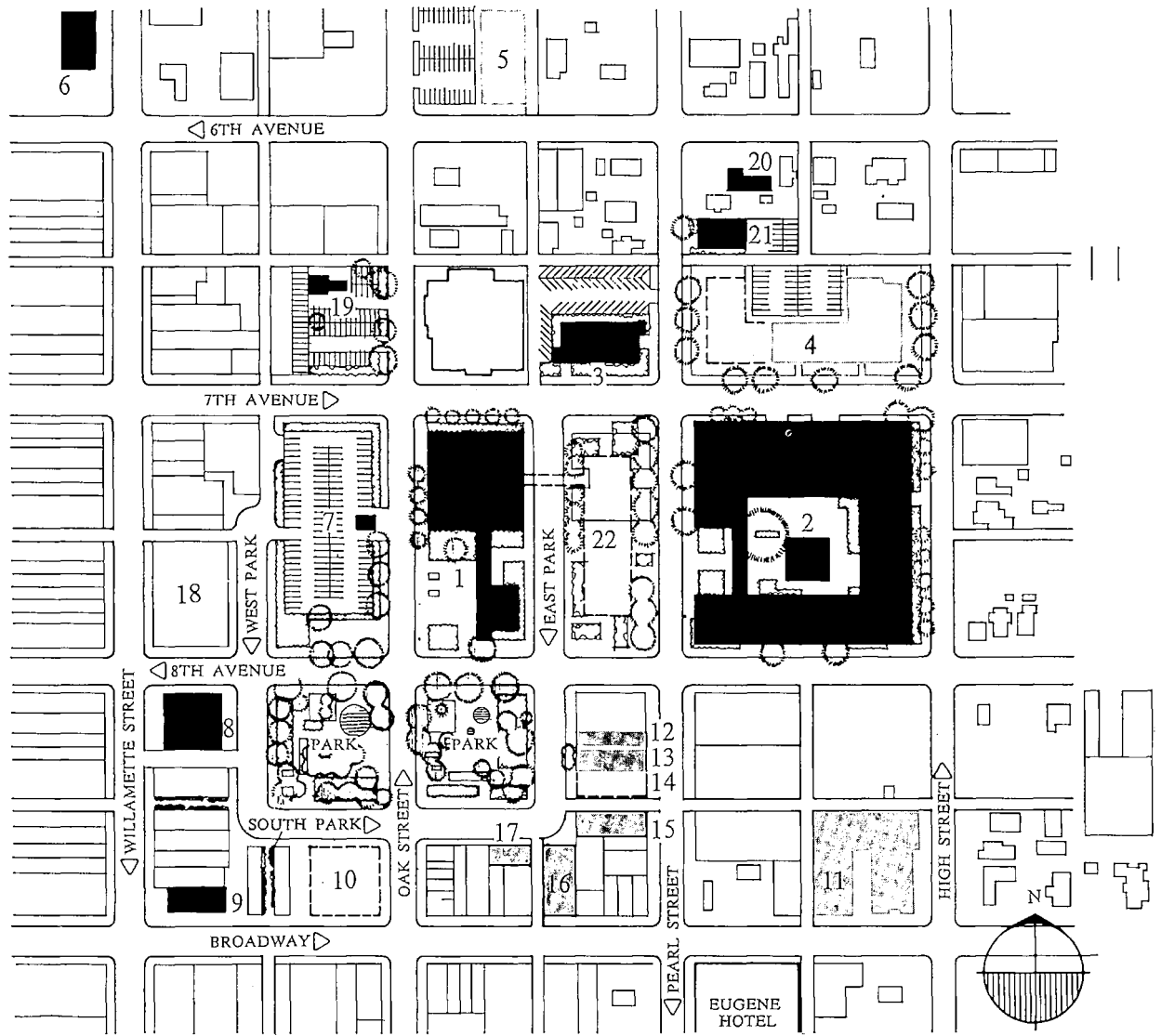
Urban Design in Practice

EUGENE, OREGON

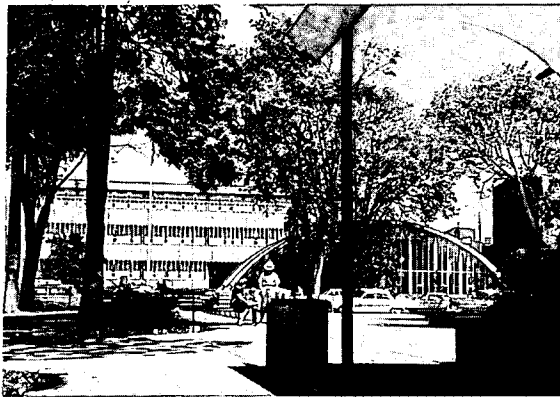
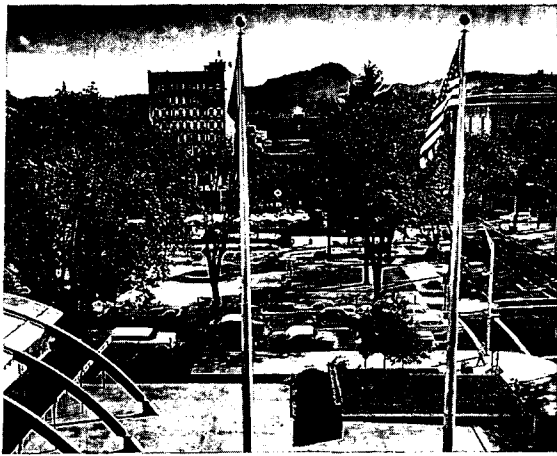
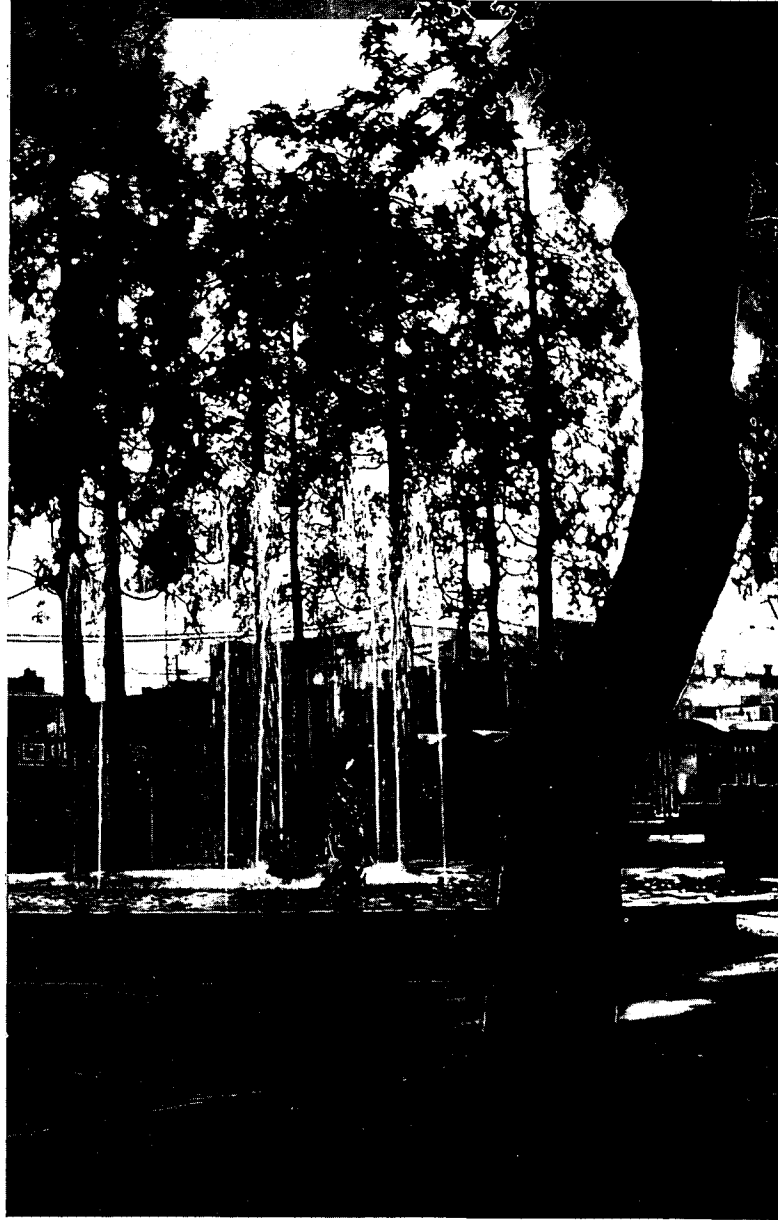


Spearheaded by the volunteer labors of local members of The American Institute of Architects, this city (1960 pop., 62,890) now boasts a handsome Civic Center and a Citation for Excellence in Community Architecture, as do Lane County and the State of Oregon. For the area embraces three levels of government—one of the nation's first examples of such cooperation in downtown rejuvenation—relating seven separate projects to a master plan. The latter was conceived by a group organized in 1953 as the Architects' Collaborative, which

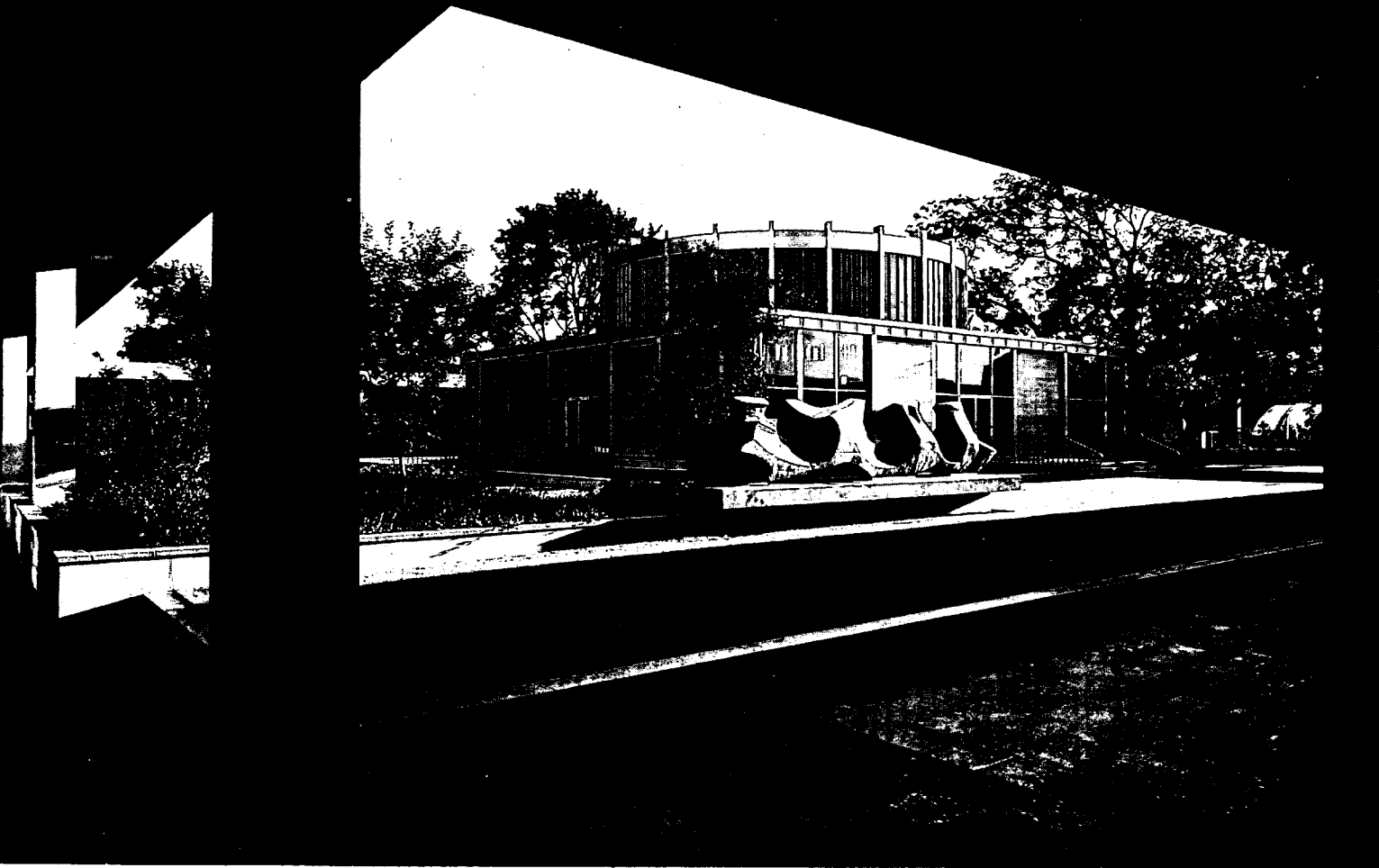
presented its proposals to the city and the county a year later and saw the first building completed in 1959. The job is not finished by any means, but what has been accomplished thus far is documented on these five pages. How has all this come about? As planning consultant Howard Buford puts it, "People in Eugene are receptive to progressive ideas. This is not too common. In most areas, residents scrap about where buildings will go, and as a result they go nowhere." But Eugene is not an ordinary city. It belongs to a region that is not wed to tradition; it has maintained, over the past decade or two, an above-average ratio of architects to the total population, according to reputation; and it has the School of Architecture and Allied Arts on the University of Oregon campus. Last, but not least, it has an understanding press. When the *Eugene Register-Guard* reported the Institute's citation (awarded as part of the Summer Conference on Trends in Public Administration sponsored by the Oregon Board of Higher Education) in a four-color, two-page spread, it said: "And so the Civic Center has moved from plans to reality, and soon many will have forgotten that here once stood an old brick courthouse, an old brick hotel, a grade school, a county jail, several large homes, a used-car lot and a variety of stores." The "many," more likely than not, will exclude the architects and the other enlightened professionals and decision-makers who know what it means to put urban design to work on a human scale.



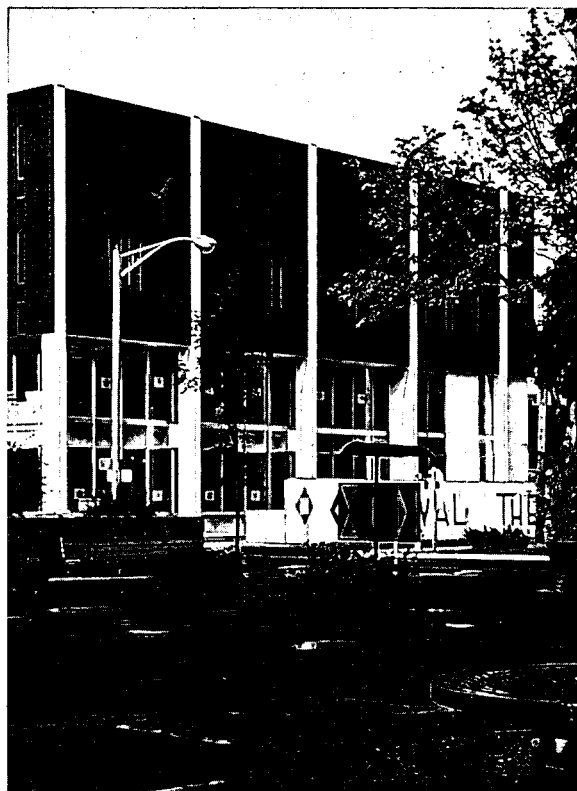
- New construction
 - ▨ Remodel and additions
 - ▤ Proposed construction
- 1 Lane County Courthouse
 - 2 Eugene City Hall
 - 3 State Office Building
 - 4 School Administration Building
 - 5 Eugene Labor Temple
 - 6 Auto parts distributor
 - 7 Lane County parking structure
 - 8 United States National Bank
 - 9 Savings & loan association
 - 10 First National Bank
 - 11 First Baptist Church
 - 12 Office building
 - 13 Office building
 - 14 Office building
 - 15 Office building
 - 16 Restaurant
 - 17 Law office
 - 18 Hardware store
 - 19 Lane County service station
 - 20 Automobile dealer
 - 21 Law offices
 - 22 Lane County Office Building



“It is fairly unusual to find, in a city of any size, a visually pleasant park area in a downtown location that is used by people,” observes James Longwood, president of the Southwestern Oregon Chapter AIA. And in Eugene, citizens of all ages have returned to the courthouse square. Old men sit in the sun reading the morning newspaper; young housewives from nearby apartments bring their small children to play on paved or grassy areas; shoppers going to and fro via the alleys (landscape architects: Mitchell & McArthur) stop for a moment’s rest; and even soapbox orators occasionally find an audience for their favorite cause. But the square is composed of buildings, too. Claiming the title of veteran among the newcomers is the Lane County Courthouse (center left), which was completed in 1959, as were the meeting hall, parking structure and service facility, and the square itself—all the work of Wilmsen, Endicott & Unthank. The State of Oregon Office Building (lower left), by Hamlin & Martin, became a neighbor two years later.



Encompassing a full square block and designed by Stafford, Morin & Longwood as the result of an AIA-approved competition, the Eugene City Hall (across page) was dedicated last year, along with a parking facility developed by the Lane County Parks Department. The offices face in on a central courtyard, set off by a huge 30-year-old walnut tree that was zealously protected during construction. The park-square revitalization also has stimulated private development, as evidenced by Eugene's main branches for two banking firms. The United States National Bank of Oregon (top right), designed by Wilmsen, Endicott & Unthank, was completed in 1961; the First National Bank of Oregon (bottom right), by Hamlin & Martin, is about to open on the courthouse square.



The Road to Achievement

BY MORRIS KETCHUM JR., FAIA

SINCE our professional society was founded more than a century ago, the world we live in has grown and changed into a vastly different one, whose design dimensions must be measured by the demands of a new architecture—the total architecture of man's living environment.

Craftsmanship will always be one of the most vital elements in architecture. Neglected, it is lost forever. We must, therefore, constantly practice and perfect it in the design and execution of the single building, large or small. But if we stop there, the single building will never be complete—it will lack its proper setting—so we must look beyond the design dimensions of the building and also apply our craftsmanship to the space around and beyond that building.

The time has almost gone by when an architect meets face to face with a single client to discuss the requirements for a single building, set in a fixed environment. More and more, in large or small offices across the country, the architect and his associates deal with building committees, government officials and other representatives of a client whom he never meets—whether that client be a private corporation or a public agency. More and more, his programs and projects include in their scope the immediate and long-range planning of the environment of his buildings, their landscaping and street furniture, the pedestrian and motor traffic which serve them and their relationship to the community of which they are a part.

To solve these problems, we bring together and correlate the vast scope of today's technology, so different from the limited vocabulary of building materials and methods of a century ago, and the varied talents of the other design disciplines concerned with building—landscape architects, engineers, economic analysts, urban planners and many others.

Every architect has a choice between integrating his consultants into his own organization or relying on a varied group of outside consultants. To integrate them requires a large architectural organization with all its risks and rewards; to assemble a team of outsiders has its difficulties but permits the smaller office greater freedom of action.

These increasing complexities of comprehensive architectural practice are matched by unparalleled opportunities for achievement. Ours is a

small profession by comparison to law or medicine but, as past President Arthur Gould Odell Jr. FAIA has said, "Never has so much been expected of so few."

Business and government are aware of the urgent need to improve our physical environment, and they are becoming equally aware that the architectural profession is the only one skilled in the design of that environment and capable of correlating all the talents and services required to create it. As a result, the architect finds himself working on an ever-increasing scale which includes the design of neighborhoods, business districts, satellite communities and cities.

The individual architect, by himself, may find it difficult or impossible to adapt his practice to the broad scope of this new total practice of architecture. As a member of an alert and strongly organized profession, he is able to do so. The resources of the Institute are broad enough in brains and manpower to successfully plan for the future of the entire profession.

As a professional society, we are building on a rich inheritance of organizational ability, technical proficiency and devotion to public service created during the last one hundred years of our existence. We have kept pace and will keep pace with the ever-widening horizon of architecture as it grows with the growth of our country and that of the world.

Our current objectives include 1) a vigorous campaign to enlarge our total membership; 2) the formation of more architectural schools whose curricula will integrate architecture with all the environmental design disciplines; 3) the firm establishment of improved liaison procedures with all the other environmental design professions, with the building industry and with government; 4) the exploration of affiliation with other specialized architectural organizations concerned with education, registration, specification writing, special building types and the interrelationship of architecture and the building arts; 5) making our regional conventions, which have a total audience twice that of our national conventions, into an even more vital asset to our profession and the public; 6) fighting and winning the War on Community Ugliness.

To expand the scope of that war and to help provide our profession and the national government with a clear-cut, concise and feasible overall plan for creating a great environment for a Great

Society, I proposed to the Board of Directors at our fall meeting that the Institute form a special Task Force on Environmental Architecture. This task force would be composed of prominent members of the architectural profession, the allied design professions and experts from other appropriate fields to work with those agencies in the Federal government concerned with this far-reaching project. It is my hope that we will thus be able to produce a "blueprint" for a better and more beautiful America.

In pursuing these basic objectives, we will not fail to maintain and advance our normal activities in support of architectural design, professional practice, education and research, public affairs and the management of our professional society.

That professional society must enlist within its ranks every competent and ethical architect in this country. Even though our total membership of 21,000 (including corporate members, professional associates and associates) represents both a sizable majority of the profession and more than 90 percent of its architectural firms, we cannot stop there. There is no room in the future of our profession for the type of splinter group which can only divide and dilute our strength and weaken the unity of our cause in our dealings with business, industry and government.

At our June convention, the delegates approved the statement that "A member shall support the interests, objectives and Standards of Professional Practice of The American Institute of Architects." Such support implies that no AIA member should also be a member of any professional architectural society which does *not* subscribe to these interests, objectives and standards. Our strength and progress depend on undivided loyalty to the one society which has proved its ability to properly represent the profession of architecture.

At that same convention, Secretary Udall told us, "A great profession must now meet a new challenge with a new sense of public responsibility. . . . The war on ugliness will not be won by building a few notable structures. It will be won if hundreds of local skirmishes, where beauty is at stake, are won."

In every community in America, this profession must lead the fight to put highways in the right place, to save historic buildings, to create new open spaces in the hearts of our cities, to prohibit billboards and overhead wires, to put junkyards out of sight, to plant trees and greenery and, above all, to redesign older cities and create new communities where automobiles and pedestrians can lead their separate lives.

To do this, we must forge a new and better partnership with the related design professions, with the enlightened leaders of industry and with

the public men who direct our local, state and national governments. This partnership is now being forged, and skirmish after skirmish has already been won. We are successfully re-establishing the fact that architects have always been the designers of cities and that no other profession has the generalized design ability so necessary for urban design.

The rebuilding of the heart of such American cities as Detroit, Philadelphia, Rochester, Fresno, Hartford, Minneapolis and Baltimore; the imaginative and practical plans approved for rebuilding dozens of other cities, large and small, including Washington, the nation's capital, have dramatically demonstrated what can be done by architects, business leaders and government to rescue and renew the urban centers of America.

Many business executives have grasped the fact that even buildings which are architectural gems are lost when set in an environmental dung heap. Mayors and governors throughout the country are beginning to appreciate that Americans will support and pay for clean, spacious, well-ordered and beautiful cities.

The Institute has established a continuing series of Citations for Excellence in Community Architecture to the cities in each region which have worked with this profession and its allies to improve the urban environment of America.

To keep this revolution on the march, the Institute, under the direction of Vice President Robert L. Durham FAIA, has assembled a wealth of material which all of us can use. It ranges from typical ordinances and zoning regulations, through worksheets and a textbook on urban design to our inspirational film—"No Time for Ugliness." This ammunition will soon reach every chapter and every member.

Every architect must prove himself a public-spirited man of vision, dedicated to the noblest ideals of his profession and capable of contributing to the public welfare. He must take a prominent part in the activities of every group which supports the War on Community Ugliness. He must serve on planning commissions and zoning boards. In short, all of us must involve ourselves in public affairs if we are to win the struggle against disorder and ugliness.

We will thus enlarge both our public image and the scope of our private practice. In no other way can we so readily meet and earn the confidence and esteem of the leaders of our own communities. Then, as brave new neighborhoods, towns and cities are planned and built, we will work with business, industry, government and an aware, informed public to plan and build them. ■

Adapted from an address presented at the Northwest regional conference in Glacier National Park, Montana.



Architectural Concrete: A Close-up Look

BY JAMES M. SHILSTONE

The president of Architectural Concrete Consultants, Inc., of Houston offers some straightforward advice on specifications, formwork, techniques.

ARCHITECTURAL CONCRETE has become one of the more popular "new" materials for the designer, although it has been around for quite some time. An outstanding example, for instance, going back to 1934, is seen in the cast-in-place work found in Washington's Meridian Hill Park (across page).

More recent structures in this medium are effective only because of the detailed studies made by architects and the care exercised by contractors. The key to good architectural concrete is attention to detail at all levels of design, complemented by an understanding of the capabilities and limitations of the material.

One of the frequent problems encountered with the use of architectural concrete is semantics. Many contractors think the material is just a fancy concrete. On the other hand, the architect is primarily concerned with the "architectural" finish. The two materials are related, but there is as much difference as between house painting and fine art. We suggest there is need for a new name to emphasize the individuality of the material. In lieu of "architectural concrete," let us borrow the French term for concrete—*beton*—and review its limitations and capabilities.

Discussion of *beton* should include precast sections as well as cast-in-place, but due to space limitations only in situ work will be discussed here. The precasting yard has many advantages and controls that can assure results of high quality. A convenient rule can be applied in the determination to use precast or cast-in-place *beton*: If the section can be used structurally, cast-in-place is probably the most economical; conversely, precast will be the most economical if the section is nonstructural.

One of the compelling reasons for design with *beton* is that it can be freely formed. This free-

forming capability tends, however, to obscure the inherent limitations. Free forming is possible, but there must be special treatment for form butt joints, form ties, construction joints, shrinkage and form release agents. A smooth, gray finish of uniform tone and color is probably the most difficult surface to achieve, particularly where large walls are involved and elephant gray cement is used.

When two form sections are butted together, the resulting joint will cause a dark line to appear in the hardened *beton* surface. The exact cause of this dark line is not known although several theories have been advanced. Attempts to consistently eliminate this objectionable feature have failed except where the joints were masked with tape. The deformation of the *beton* surface caused by the tape will be removed, however, if the surface is textured by abrasive blasting or bush hammering. If the joint is not taped, the dark line will appear even if the surface is textured, since it extends 1 inch or more below the surface.

Form joints can be disguised by accenting their occurrence with a rustication strip attached to cover the joint. A 1-inch-wide groove in the *beton* surface is frequently used to produce a joint which is sharp and well defined. Similarly, construction joints should be accented by rustication, not only on smooth *beton* but also for textured surfaces. There has been some success in concealing these joints using the textured *Arbeton* or *Naturbeton* techniques described later, but the results are not foolproof. If the forms are not aligned between adjacent pours and the joints not rusticated, there is frequently a slight offset which under certain shadow condition will haunt the designer.

Holding the forms together is done with various systems of form ties, the most popular of which is the snap tie with a wooden or plastic cone. A steel rod is notched so that when the form is stripped the cone can be removed and broken off. This creates a hole which must be filled to prevent rust from the steel discoloring the *beton* surface. The

hole can be patched so that it does not show in exposed aggregate surfaces. In smooth concrete, accenting the hole is suggested, rather than attempting to conceal it.

Other snap ties do not use the cone but have a washer in contact with the interior form wall. The recess left by the washer is distinguishable in smooth beton, but the major difficulty arises when the tie snaps at the surface. Either the hole must be enlarged to snap the tie at the notch or the tie must be removed by drilling. Drilling is preferred to preserve uniformity. If this type of snap tie were 100 percent instead of 90 percent effective, it would be a great aid to textured beton.

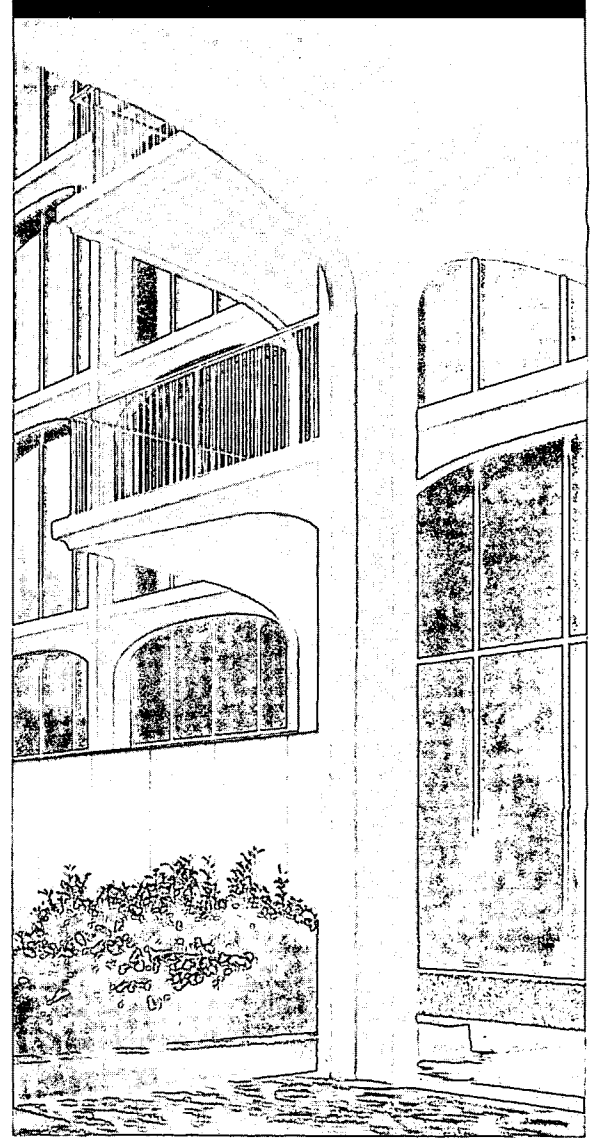
Type 300 stainless steel ties without cone are also used and patches omitted. The hole left by the washer type tie is almost unnoticeable in a textured surface. There are techniques which can be used to offset some of the problems mentioned but they are costly, require massive forms and should be considered in more detail than space allows here.

There has been considerable discussion as to whether performance or procedural specifications should be prepared for beton. It is a relatively new construction technique for cast-in-place work, and thus a performance specification in most cases would be unfair to the bidding contractors. Very few have had sufficient experience to be in a position to evaluate a finish and then properly estimate the cost of several construction methods. In many cases, the contractors may not be aware of some of the possible methods.

The performance specification can be used if it is augmented by an outline of suggested construction methods and the procedure which appears the most adaptable for the project. The sample which the contractor must match should be a full-size section constructed in a manner proposed for the project. Small samples done in the laboratory may not be duplicated under job conditions. This is particularly true for exposed aggregate. Smooth beton samples can be laboratory cast without air pockets or other surface blemishes, but small imperfections must be expected in the field.

In a beton project, consideration must be first given to the materials and the construction procedures which can be used by the contractor for a particular finish. Important points for consideration are 1) the colors of the aggregates and of cement 2) the gradation of both coarse and fine aggregates 3) the behavior of the mix during blending 4) the behavior of the mix in transport and discharge from the mixer 5) the placement and manipulation techniques 6) the formwork 7) the method of final finish and 8) the sealer.

The aggregate cost can be a major item. Locally available aggregates used in structural concrete construction can cost as low as \$2 per ton, while



*Inwood Manor, Houston: Neuhaus & Taylor, architects
—steel-formed painted concrete surface.*

some of the more architecturally desirable quartzes and granites can cost in excess of \$40 per ton. Prior to bidding, an extensive aggregate search to select the material for the desired finish at the most economical cost is warranted since cost variations of \$10 or more per ton are possible. Small projects can require 100 tons, while large high-rise requirements for 10,000 tons are normal.

Even in smooth concrete, the color of a coarse aggregate will affect the tone of the finish. In white cement concrete, individual particles of coarse aggregate may lie 1/16 of an inch or less below a finished surface. A dark stone will shadow and tone the finish.

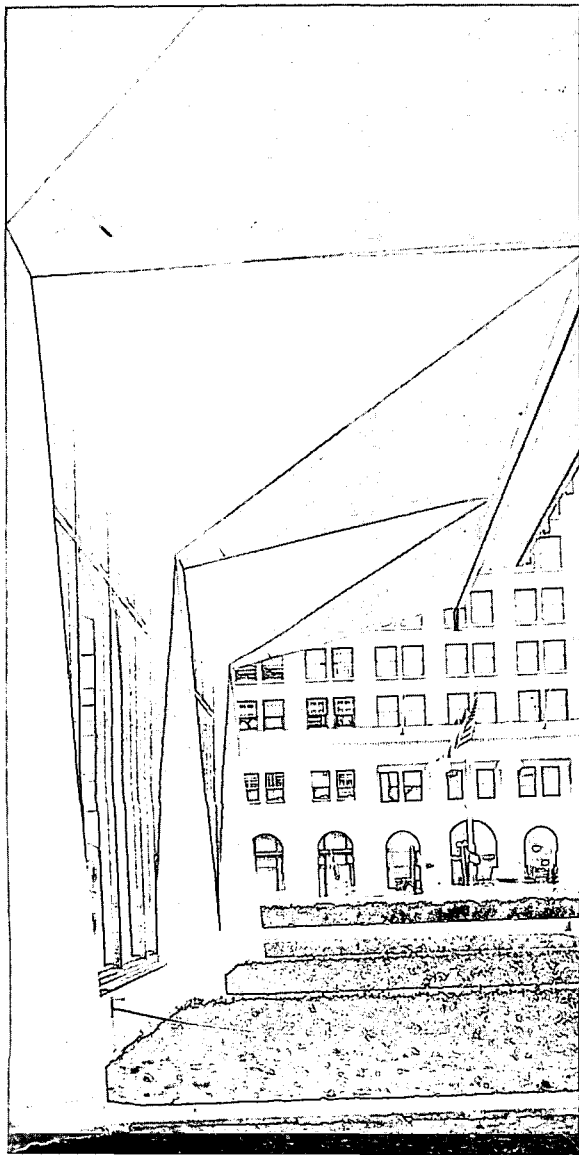
The sand selected has a great influence on the tone of the surface, particularly in white cement beton. Certain sands available but not normally used in concrete may be specified to influence the color of the finish. The attractive sands may cost 50 cents to \$2 per ton more than the concrete sands which are generally used. Crushed granite and quartz stone sands can be effectively used to impart permanent color and tones to beton.

The selection of the cement will materially influence the finish of the structure. There are cements which have definite tan tones, but generally cement is gray with variations in shades and tones. Not only must various brands be considered but also individual mills and their capability to produce a uniform product. White cement is frequently believed to be too expensive. This may be true for concrete but not for beton. The white cement in some areas may add \$9 per cubic yard to structural concrete costs, but the added cost per square foot of finished surface of a 12 by 18-inch column would be about 10 cents.

Specially selected materials when proportioned for beton can cost \$50 to \$75 per cubic yard in the mixer. For an exposed aggregate project, this cost can be economical. Only by a detailed study of the project and the budget for the finish can determination of economy be made.

ASTM C-39 is frequently referred to in specifications for readymixed concrete, allowing a 1-inch slump variation in the concrete. Particularly for gap-graded low slump construction, this variation may not be acceptable. Many old concrete mixer

Rohm & Haas Co. Building, Philadelphia: George M. Ewing Co., architects; Pietro Belluschi FAIA, consulting architect—formed smooth concrete surface.



trucks will not discharge concrete with less than a 2-inch slump. The architect should clearly state in his specifications the variations from ASTM C-39 which may be required.

The type of formwork used can vary greatly with the desired finish. Wood, fiberglass, metal, plaster, styrofoam and many other materials have been used as forms, singly or in combination. Plywood forms with a high-density plastic overlay are frequently used for smooth surfaces. The cost is about twice that of standard plywood forms, yet the number of reuses is four or more times greater. Oiled plywood forms are not usually acceptable as the beton surface may be stained and the form surface irregularities such as patches are transferred to the beton surface.

There are many instances where it is possible that a form be reused 25 or more times or where the form is so intricate that fiberglass or steel should be employed. These are superior in many ways to wooden forms. The number of reuses, the surface appearance and the ease of handling for erection and stripping may reduce the overall construction costs considerably, even though their initial cost may exceed by 10 to 20 times the cost of standard plywood.

Plaster, styrofoam and other molded materials are used for one-time castings as form liners. These materials may be easily cut or shaped to impart an unusual design or sculptured face to the beton. Undercutting and sharp corners can be easily preserved. The cost of this procedure is high and generally limited in its application to very complicated cast-in-place murals.

Formwork for smooth-surfaced concrete is perhaps the most critical and the most difficult to control of any type of formwork encountered for in situ beton, particularly where large walls are involved. Any imperfection in the surface or any misalignment is immediately brought to attention and becomes the predominating factor in the character of the surface. Large areas which have been accomplished with a smooth surface have usually been interrupted by false jointing or rustications.

The use of fiberglass forms for smooth surfaces requires little or no release agent, while wood and metal forms require the agent to aid in the removal of forms after curing. Since the release agent may affect the color of the surface, great care must be taken in its selection.

Recent developments in the manufacture of plywood, hardboard, corrugated metal, rubber and other materials have opened an unlimited field of beton design. They are often specified as the formwork for large uninterrupted concrete surfaces. Texturing surfaces by unusual formwork or form liners is relatively inexpensive. Plywood and fiberboard are manufactured with striations, checked



Golden Gateway, San Francisco: Wurster, Bernardi & Emmons and DeMars & Reay, associated architects—textured.

or corrugated designs. Many types are carried by manufacturers as stock items and almost any design can be produced on special order. Formwork with these materials produces a surface that requires only cleaning and sealing.

Forms constructed of rough boards have been used for many years but only recently as an exposed architectural surface. Tongue and groove, band sawn, circular sawn (limited availability currently), undressed and raised grain timber are used to produce the popular textured surfaces. When using board textured surfaces, particular care must be taken to assure that the same type of wood is used throughout, since different woods absorb moisture in varying degrees. The amount and speed of absorption will determine the resulting color of the finished concrete surface. The more absorbant the wood, the darker the finished surface. Random variations may be planned. The number of reuses must be limited because the concrete finished color tends to darken with each use.

Form liners are available for standard designs, serving the same purpose for smooth concrete as the aggregate transfer method for exposed aggregate concrete. Liners made of styrofoam, wood, rubber, fiberglass or thermal plastics can be manufactured to produce any design or shape and be attached to standard concrete formwork. The design is transferred to the concrete surface. It is possible to use rubber and plastic liners several hundred times before deterioration. Molded rubber linings have not been used to any extent until the last few years. Undercutting and intricate designs which are not possible with other materials can be produced with rubber lining.

Paul Rudolph has popularized the reeded surface where the fins project from the hardened concrete removed by striking with a hammer. Alternate blows are struck in alternate directions. The technique was effectively used for the Arts and Architecture Building at Yale University and for the Endo Laboratories. The recently com-

pleted Elephant and Rhinoceros Pavilion at the London Zoo is another interesting application.

Particular attention must be directed toward the placing and vibration of beton. The placing must be accomplished so that individual lifts are not apparent in the finished surface. Proper vibration of smooth beton is even more critical than for exposed aggregate or form-textured beton. Large voids or segregation of materials will give a poor surface appearance, and patching is difficult. Unfortunately, there are no standards for concrete vibrators. There has been a trend to avoid overvibrating concrete, resulting in many misconceptions as to what is proper vibration.

What are the effects of power source, frequency, amplitude and head dimensions on the operation and effectiveness of vibrator leads? There is no concise evaluation of vibrators and their effect on finishes. The selection should be based upon performance rather than maintenance costs. Selection of a median unit for a project is not acceptable.

The actual concrete vibration is generally left to a laborer who generally does not comprehend technically what he should do and why the selected methods are best. It is a mistake to spend many dollars and take great pains to assemble the best materials and equipment, and then leave one of the most important steps in the construction to a laborer. Beton placement and vibration should be under the direct supervision of a concrete engineer.

Exposed aggregate beton offers great latitude for the contractor since variations in uniformity are not as distinguishable as in smooth surfaces. There are four primary construction methods: Natur-

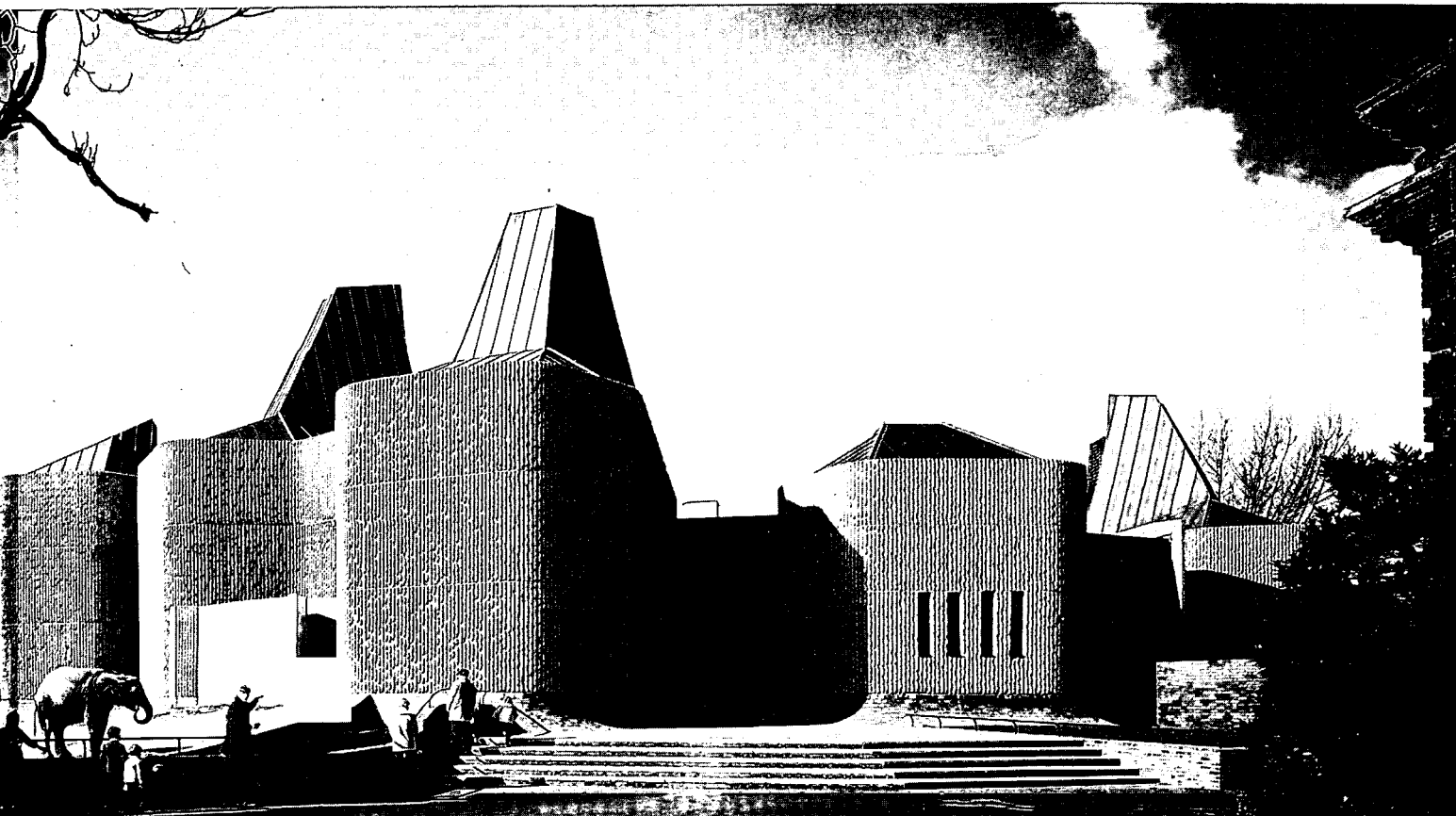
betong, Arbeton, gap-graded low slump and aggregate transfer.

The Naturbetong technique was developed in Norway by architect Erling Viksjø and engineer Svere Jystad. The reinforcing steel and form are constructed in the usual manner. The form is filled with the aggregate to be exposed. A rich grout is mixed in a colloidal grout mixer and pumped through holes in the form walls or through tubes previously placed within the forms to fill the voids in the preplaced aggregate. When the form is stripped, concrete appear as normal concrete, but when abrasive blasted, the aggregate distribution over the exposed surface is absolutely uniform. The aggregate to be exposed must be within certain gradation limitations, usually 1½ to ⅝ inches in size, to assure channels of sufficient size to allow flow of the mortar.

Arbeton is a construction method developed by this writer and his associates. In this technique, the reinforcing steel is erected in the usual manner and a mesh tied to it. The form is erected, and the space between the mesh and the form is filled with a selected aggregate similar in size to that used in Naturbetong. A special mix of structural concrete with a surplus of mortar is placed in the void section, and surplus mortar from this mix is moved through the voids and the face aggregate by means of high-frequency vibration. When the form is stripped, the surface is abrasive blasted or bush hammered to expose the aggregate.

A construction method gaining in popularity is gap-graded low slump concrete. This mix is designed to omit certain aggregate sizes and has a

London Zoo's Elephant and Rhinoceros Pavilion: Casson, Conder & Partners, architects—reeded and hammered.



very high coarse aggregate factor. Though the slump will be in the range of 0 to 2 inches, a properly designed mix is surprisingly workable. This consistency is necessary to prevent segregation during placement. Texture can be achieved by bush hammering or abrasive blasting.

A final process is the aggregate transfer method. The selected aggregate is embedded in glue applied to plywood or other sheet form liners. The liner is attached to the form and the concrete placed. The cured mortar is stronger than the glue and holds the aggregate when the form is stripped. The glue is generally water soluble and is removed by washing. This technique is applicable for specialty work and should be done only by personnel experienced in this method. The concrete must be placed with care as the stones can be jarred loose from the glue.

Each construction method has its limitations. Naturbetong requires that specialized equipment be available at the site. The cost of the aggregate to be exposed is important. If a local stone is esthetically acceptable, it will be highly economical. Cost of filling the entire form with an aggregate valued at \$30 per ton or more could be prohibitive for large sections. It is possible to use a combination of the Naturbetong and Arbeton processes by using a mesh to separate the expensive and the cheap local aggregates.

For Arbeton, sections should be relatively large. Thickness of the face aggregate is determined by the gradation of the face aggregate but is generally about 2½ inches. The minimum wall thickness, including this face aggregate, should be 10 to 12 inches to effectively use the process. Under the required heavy high-frequency vibration, wall forms not sufficiently reinforced may allow deformation and waviness of the surface distinguishable under certain shadow conditions.

The gap-graded low slump beton requires large sections and sizable openings between the reinforcing steel to allow the placement through large tremies. Ease of placement is important for efficient construction because the mix does not flow readily. Once in the forms, a ½-inch slump concrete can easily be consolidated, but the vibrator must be carefully used to assure that it does not come within 2½ inches of the form. A vibrator striking the form can move the coarse aggregate away from the form and cause a mortar line to be present on the surface after the aggregate has been exposed. The aggregate distribution can be very good but not as uniform as that produced by Naturbetong and Arbeton. Gap-graded beton is best used with small aggregates, while Naturbetong and Arbeton are best suited for large ones.

There are several techniques which can be used for texturing the concrete surface. These include abrasive blasting, bush hammering, retarding the set of the concrete at the form and washing, and finally grinding and polishing.

Difficulty with abrasive blasting beton is frequently cited because of a lack of experienced personnel. However, the more important factors are timing, materials and equipment. Abrasive blasting for deep etch should be done as soon as possible and may be accomplished within 48 hours after casting, except for soffits. With early blasting, special concrete curing procedures must be used. Light "brush" blasting does not require the critical timing. In Norway, abrasive blasting may be done within 30 hours after the grout has been injected, frequently the same day.

Such items as the size and type of compressor, the diameter and type of abrasive blasting nozzle, the type of abrasive pot, and the diameter of the various hoses are all interrelated for efficient blasting. Pressures at the nozzle, between 90 and 110

Norsk Hydro Building (top), Oslo, Norway: Erling Viksjø, architect—Naturbetong columns and beams; murals painted on smooth and textured surfaces. Great Southern Life Insurance Co. Home Office Building (bottom), Houston: Skidmore, Owings & Merrill and Wilson, Morris, Crain & Anderson, associated architects—Arbeton exposed aggregate columns and beams with precast wall panels.

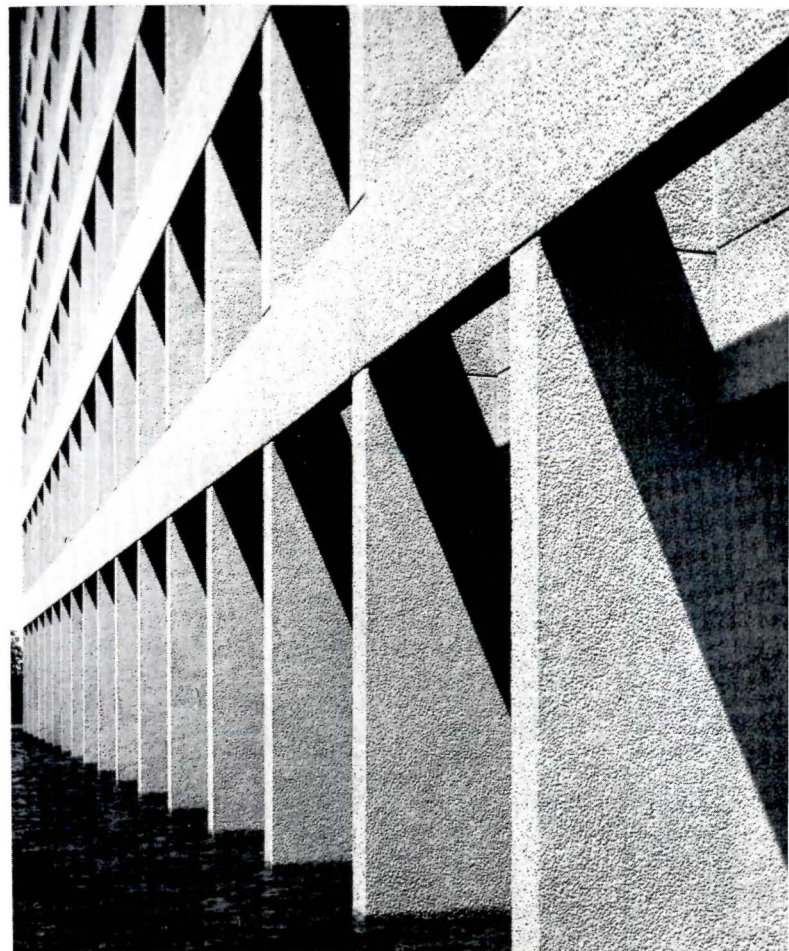
pounds, can effectively do this type of work. A $\frac{3}{8}$ -inch-diameter blasting nozzle is said to be 220 percent more effective than a $\frac{1}{4}$ -inch nozzle. With a low pressure and a large nozzle, the abrasive will bounce off ineffectually. A rotary compressor is best because of uniform air pressure.

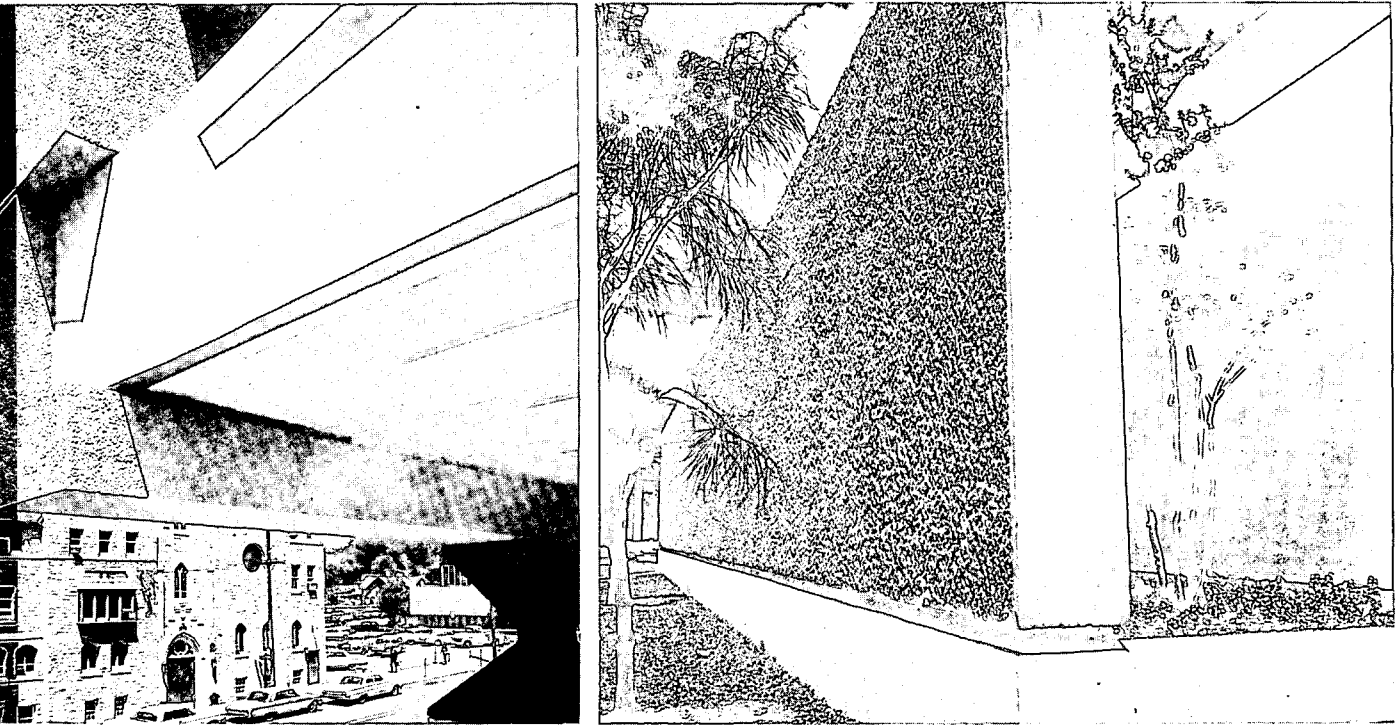
The type of abrasive to be used and its gradation are important. Though the term "sand" is frequently used, there are many types of abrasives. The most expensive ones, due to efficient cutting rate, can be the most economical. The gradation of the abrasive frequently determines the effect of the blasting operation upon coarse aggregates. Some abrasives will leave a tight haze over the surface. With abrasive blasting, there is a great deal of dust generated which should be controlled by the contractor to prevent damage claims. The most effective abrasive blasting operation may be selected by experimenting on mockups.

Bush hammering is a very general term applied to the mechanical spalling of the beton surface. It is recommended there be three classifications, the first of which is "scaling" used at the Dulles International Airport terminal. This finish was achieved with gangs of three-pronged air-driven scalers which render a surface without deep texture.

The second technique is done with a hand bush hammer (very similar in appearance to a meat tenderizer) or with air-driven tools faced with a series of pointed tips. The spacing between the hard-faced tips determines the texture. Bush hammering renders a surface with considerably more texture than found with scaling.

The third technique is jack hammering. In this operation, single pointed tools are used in air-driven hammers and the surface is very rough and irregular. The effectiveness and appearance of bush hammering and jack hammering depend upon the operators. The work can be done by





American Republic Insurance Co. Headquarters Building (left), Des Moines, Iowa: Skidmore, Owings & Merrill, architects—abrasive-blasted cast-in-place gap-graded concrete mix. Architects' Office Building (right), Houston: Wilson, Morris, Crain & Anderson, architects—jack-hammered concrete surface.

laborers who should practice on other surfaces before performing the work on beton.

Research in recent years has attempted to develop effective chemicals which may be applied to the forms to retard the set of the surface mortar. The retarders are applied to the forms by rollers or spraying. In some cases, cloth impregnated with the retarding agent is stapled to the form work.

Manufacturers' recommendations should be closely followed. If beton is cast against a surface with the retarder and if the form is not stripped, the concrete will eventually harden, and there will be no aggregate exposure. Time, temperature, humidity and cement factor determine how long the retarder is effective. Contractors should test the chemical to determine how long the forms may remain and still assure the uniform texture specified by the architect. It is suggested that the form retarders as currently developed be used on vertical surfaces only for limited areas. Lack of uniformity has produced numerous disappointments.

The construction of mock-ups is frequently specified for beton to prove the proposed methods. In most cases this mock-up is a part of the general contract and is performed after the award. Unless the same materials have been used in identical sections with regularity in the area, and unless the bidding contractors are thoroughly familiar with costs for this construction, the mock-up may be constructed too late. Not only is the beton finish of concern, but of critical import is the capability

of a contractor to place the mix in the sections with the reinforcing as specified.

Mock-ups should be constructed during the planning of the project. At first, samples should be cast for color and texture. Next, small-scale mock-ups of full section but short heights should be cast with reinforcing steel and forms identical to those which will be used in the project. Finally, a full-scale mock-up two or three bays wide and one story high should be constructed after tests have proved the practicality of the method.

Prebid mock-ups may indicate that changes must be made in plans. These changes are more economical at this stage than as change orders to a contractor. The contractor awarded the project should also construct samples to prove his capability to produce the specified finish.

Effective use of beton is proving to be a matter of expensive concrete but economical construction. Advance research, testing and demonstrations for the bidding contractors can provide the information which will assure a sound bid. Without this information, contractors are apt to include a "scare factor" in their proposals, concealed in the bid but many times the cost of the work.

There is no one best beton construction method. It is difficult and frequently a great mistake to design a structure and then specify the technique to fit. It is recommended that architects either have staff personnel versed in all the problems and techniques of beton and in the availability of natural aggregates or engage special consultants. ■

Flexibility in K-12 Schools: Change Is Here to Stay

BY WILLIAM CORLETT, AIA

Member of the AIA Committee on School and College Architecture

SCHOOL ARCHITECTS have come to recognize that the only certainty in K-12 education is change.

Six years ago C. Herbert Paseur, writing about "Flexibility in School Plant Design" (SPS BT 1-38) allowed as how the term meant three things: expansibility for exterior changes; versatility for multifunction; convertibility for interior changes.

In those days, educators were not demanding "instant convertibility," believing its disadvantages outweighed the advantages. Paseur did, however, predict that this balance could easily be reversed, and how right he was.

So often educators tell us: "Next year we have planned an educational program that requires these kinds of spaces, but we're not sure of the program's success, so give us flexibility if our experiment bombs."

Or they might say: "Give us flexibility in spaces, both large and small, because we aren't certain that our staff will successfully adapt to team teaching and/or large-group instruction, and we may revert to the traditional self-contained classroom."

The educators demand flexibility without really knowing what it is. "Give me flexibility and I don't have to make up my mind."

The exciting departure from the traditional double-loaded and rigid cell block of rectangular classrooms constitutes an unprecedented challenge to the school architect, who must meet the demand for large unobstructed areas which are readily divisible into smaller spaces and/or, vice versa, which remain well heated, ventilated and lit—and be created at no increase in construction cost.

Architects and their engineers over the years have learned to know, love and depend upon fixed columns and interior walls, having found them most convenient for such mundane purposes as 1) supporting the building's roof, 2) space for water supply, vents, heating and ventilating ductwork, electrical conduit, convenience outlets, light switches, clocks, 3) space for chalk and pinning board, casework and 4) elements that effectively, if rigidly, visually and acoustically separate one space from another.

Notwithstanding the minor problem created by our educator friends' recent demands, all of us have enthusiastically tackled the challenge. Some have met it in a manner that

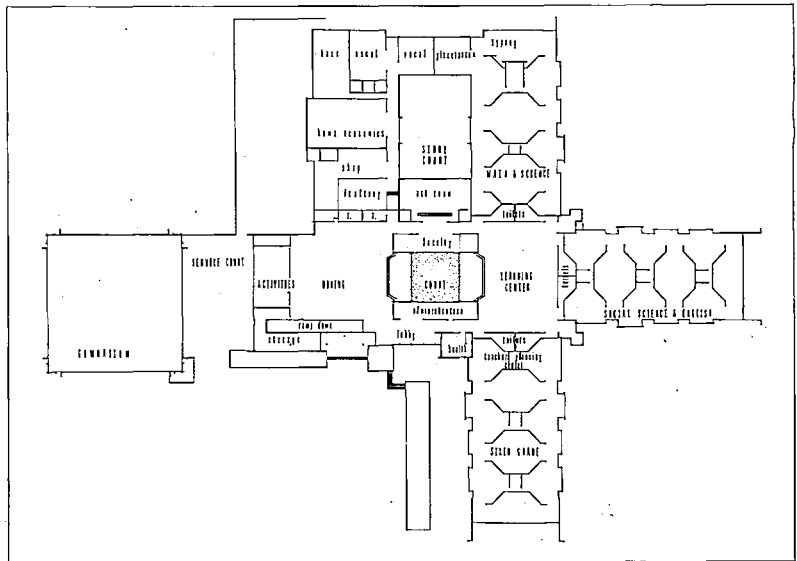
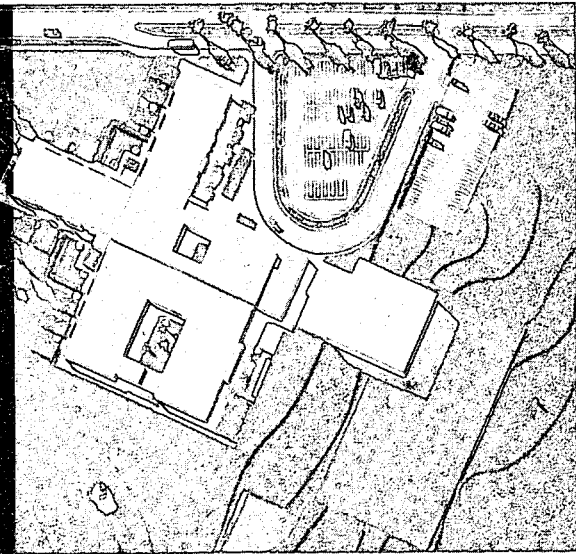
has not only created a new and better teaching and learning environment but, in the process, has produced some distinguished architecture.

Our teammates in the construction industry—the manufacturers—have, through the architects, received the educators' message none too soon and have been most cooperative in developing new and superior products and systems that broaden the architects' palette at this time of revolution in school plant needs.

Much incentive to our nation's manufacturers has been stimulated by the School Construction Systems Development program (SPS BT 1-57), under the sponsorship of the Educational Facilities Laboratory, which has called upon industry to develop structural, integrated lighting-heating and airconditioning, and movable and relocatable wall components as tools for the architect.

Acoustical problems created by the demand for spaces in which several activities can be carried on simultaneously are being resolved rapidly by the successful development of appropriately rugged carpeting that, before long, need not be surreptitiously termed "acoustical flooring." Carpeting in schools is fast losing its "luxury" connotation

One of a series of papers prepared by members of the AIA Committee on School and College Architecture and by selected specialists to make laymen aware of school building problems and trends and to stimulate discussion. They are not intended to be definitive last words and carry only the authority of their respective authors. New subjects are being developed and contributed articles are welcome. Reprints of these nontechnical articles are widely distributed to educators and interested laymen. One copy of each current issue will be sent free of charge; additional copies, 10¢ each.



Barrington Middle School utilizes demountable partitions which permit 12 typical double-loaded corridor classrooms, or rooms of any size, shape or arrangement to be established after the overall area is completely finished.

as experience has proven that its initial cost is more than offset by reduced maintenance of the floor surface itself, falling furniture and falling students and teachers. Experience has strongly indicated that student behavior in carpeted spaces is favorably affected.

Response to the demand for segmented movable walls that can be readily moved by a slightly built teacher, and whose construction and closure design creates sound separation equal to or better than the average fixed partition, has been heartening in that architects are besieged by manufacturers whose movable walls have a higher decibel rating, operate more readily and cost less than their competitors' products.

It is incumbent on the architect, however, to recognize that a movable or demountable wall is only as effective, acoustically, as the construction around it, as sound travels efficiently through heating and lighting plenums above hung ceilings, in and out of adjacent windows and through poorly insulated floors.

School design has survived the dictum of not so long ago that nat-

ural north light was good, bilateral natural lighting was even better and trilateral natural lighting involving skylights was the ultimate.

Windowless or virtually windowless learning spaces abound in many of our new schools notwithstanding the protests of those who see nothing sacrilegious in a pleasant view or an occasional weather report, provided direct sunlight is screened out and room darkening can be readily achieved.

Chicago architect Spencer B. Cone AIA has the following to say about flexibility in K-12 schools:

"There is probably more usable flexibility for most administrators in having as much total space as their dollar will buy rather than in trying to expand small areas by the use of movable walls, etc. When budgets are tight, I am an advocate of trading high-cost finish and gadgetry for as much space as I can obtain. I often hear or read that students and teachers take special pride in fine, expensive buildings. I can rationalize without difficulty, however, that the teaching-learning process does not deteriorate in a workshop atmosphere, provided criteria for adequate lighting, ventilating and acoustical requirements are met, and it does not follow that there will be a loss of pride in the school.

"I find that most administrators and architects do not have a specific program or specification for flexibility. They are only aware that they might be caught with their pants down if they can't claim to have it in their new buildings. I am sure that many have not adequately an-

alyzed the cost of measures they took to obtain flexibility.

"I also have found that teachers, like most people, tend to avoid manual labor and, either through dislike or laziness, will not make proper use of built-in flexibility if it requires extra effort or time on their part—unless, of course, they are compelled to do so. Consequently, many ideas that look good on paper may go begging in actual practice and are probably a waste of construction dollars."

Cone & Dornbusch's Barrington (Ill.) Middle School, which utilizes SCSD's components, aptly practices what the architect preaches in that maximum open areas are provided, thus facilitating many configurations of interior spaces utilizing demountable partitions. Twelve typical double-loaded corridor classrooms or rooms of any shape, size and arrangement may be set up *after* the large (11,000 sq. ft.) area is completely finished, including carpet or other finish floor covering.

Flexibility was the prime motivation in the creation of Troy High School in Fullerton, California, as designed by William E. Blurock & Associates. Troy's Principal Webster D. Wilson, after living in the school for two years, has the following to say:

"The demountable partition is the best way to provide the potential for flexibility in an education program. It avoids the permanency of solid walls; it avoids the permanency of 'movable' walls. The latter will open or close but are fixed at one point and thus are inflexible.

"Ideally, a school building should

be outwardly esthetically pleasing, but inside it should be devoid of all permanent partitions. Thus, the community, parents, staff and students can be proud of its appearance, and at the same time the educational program can be developed unhampered by the restrictions of room sizes and locations.

"At Troy High School we have more flexibility in our buildings than we have used so far. In our first year of operation, we have left out some partitions, installed some half partitions and made some minor modifications to satisfy our educational program.

"In the 1965-66 year, our present buildings are overcrowded with the addition of 500 new students; therefore, we are moving partitions to create smaller areas for smaller groups and larger areas for larger groups. Next year we will change partitions again to provide improved educational experiences.

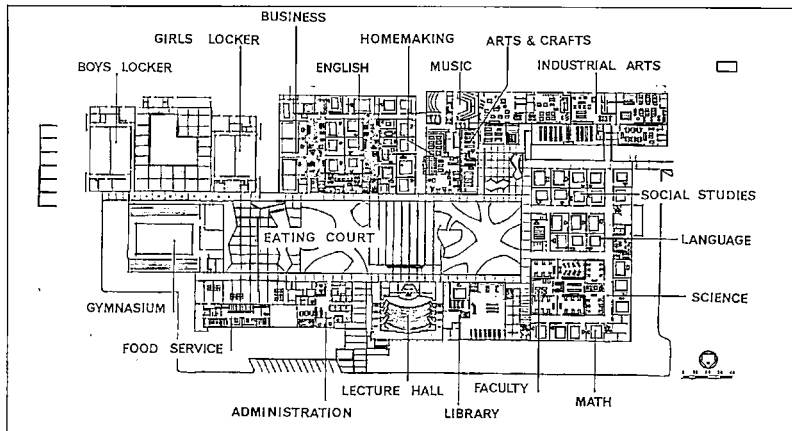
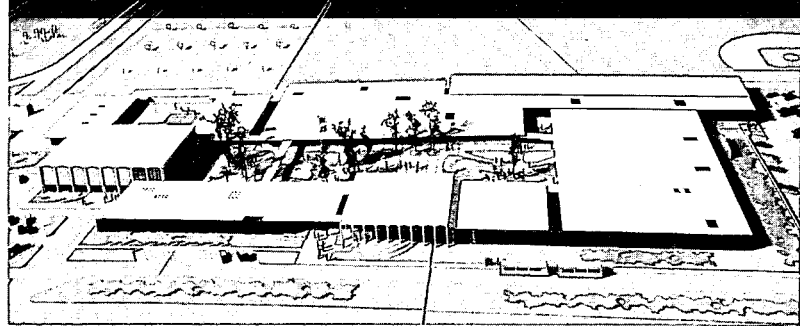
"We estimate that it costs about \$100 to move a full-size partition, which indicates that we can make all of the necessary changes this year for about \$2000.

"All of these building modifications for next year have been a result of careful study on the part of departments and administrators and the educational programs they have developed. We do not have to say, "We'd like to try this, but we can't because of fixed walls.

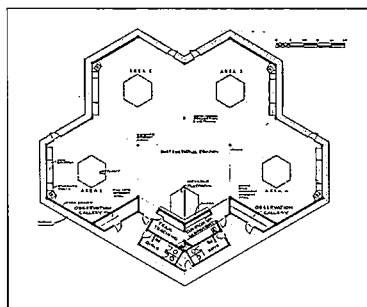
"In an educational world where there is constant improvement in materials, methods and techniques, it is essential that building flexibility be provided. As our educational program improves, we will be able to provide the building facilities for that program. At Troy we're ready for whatever improvement the future suggests in education."

An example of the demand for change and flexibility at elementary school level recently emerged from the Reed Union School District's Granada School in Marin County, California, where the administrators summarily tossed out conventional classroom construction to fulfill their "basic and crucial commitment" to promote better teaching. To accomplish their objective they set out to organize instruction on an individualized basis, stressing three important aspects:

- *Nongrading* of the child's placement, advancement pattern and curriculum.
- *Multitaged grouping* of children in instructional families of 100-120 learners.
- Deployment of adults on the basis



Troy High School, which finds it has more flexibility than it has used thus far, continues to move partitions to accommodate an increasing enrollment.



Granada School employs the cluster plan, but movable walls between the learning areas as originally designed were omitted for budgetary factors.

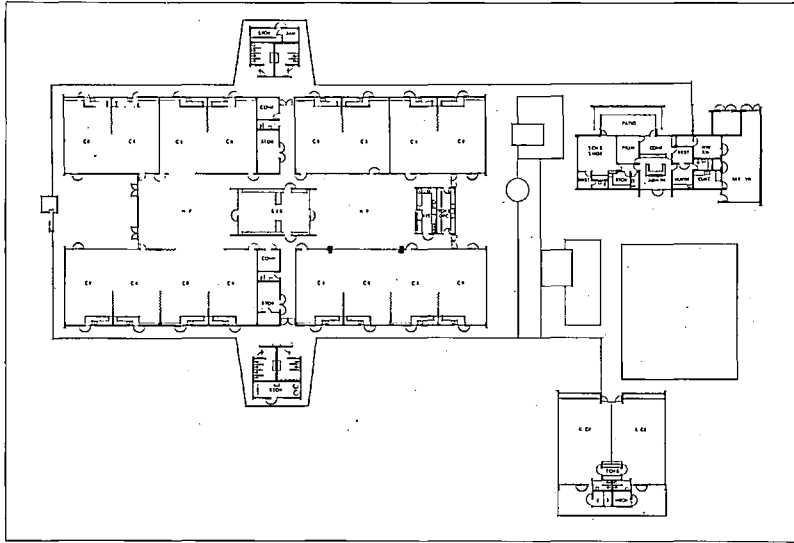
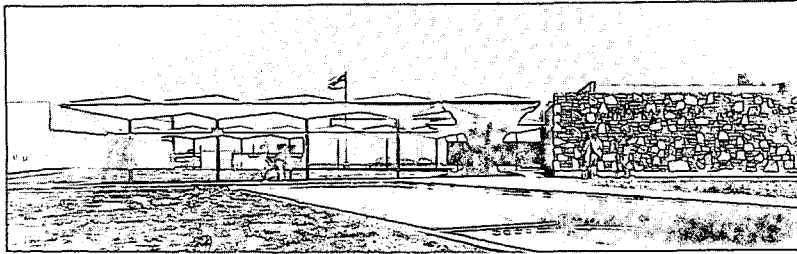
of teacher teams with shared responsibilities for the strategies used in each instructional family.

Architects Callister & Rosse developed the cluster plan consisting of four learning areas, a common instruction area, team planning center, curriculum laboratory and observation rooms, all to house a "family of 100-120 students." Movable walls between the learning areas were the victim of a budget limitation and were deleted in favor of carpeting throughout, a successful alternative.

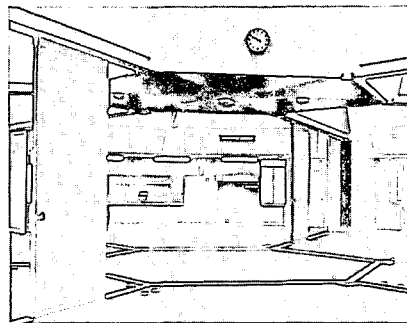
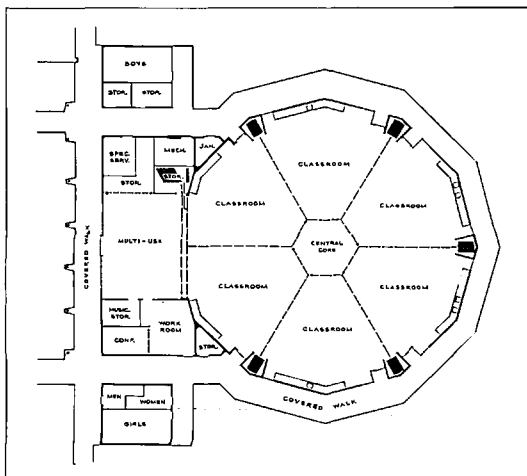
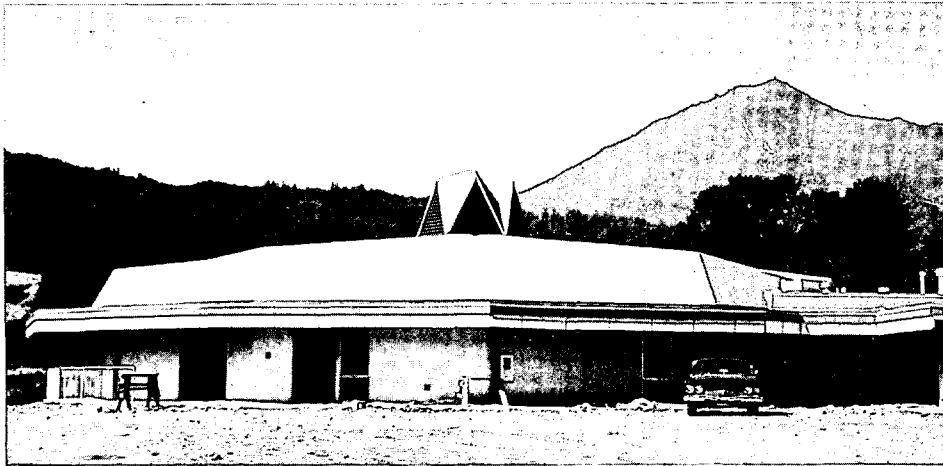
Architect Lee B. Kline's Kil-

lian School in La Puente, California, complies with a program in which flexibility of space is basic.

For Grades 1, 2, and 3, the classrooms are arranged in series of twos, so that two teachers at a grade level may work together as the educational program emerges for the children in these rooms. In the upper grades—4, 5 and 6—a greater participation of teachers is visualized. The classrooms have been designed for four teachers to work together or for individual self-contained classrooms, as the occasion demands. Teachers have been



Killian School teams up flexible programming with movable partitions between classrooms themselves, and demountable walls between classrooms and multipurpose areas. The building is windowless except for the patio wall.



Wolfe Grade School is a clear-span building which can boast that all its interior walls are movable and "disappearable," providing six self-contained classrooms or any combination the program requires.

encouraged to expand their instruction area, particularly at the upper grade level, through the proximity of the multipurpose area to their basic classroom space. The library has been located so that it is accessible from either multipurpose area and has two walls of glass.

Movable partitions, both of heavy construction and of light wood folding panels, have been employed. All other partitions between classrooms and the multipurpose areas have been constructed of demountable wall. The building has the potential of being adaptable to any changes that the education program might dictate.

The structure also contains a teachers' workroom, a food-service center, counseling rooms, storage rooms, a dining area, an instructional multipurpose area and a patio to provide an outdoor classroom. The building is completely airconditioned. All classroom areas, as well as the multipurpose area, are carpeted. The building is windowless, except for the wall adjacent to the patio, which is glare-reducing glass. With the use of movable walls and interior glass, a spacious view is provided anywhere from the interior of the building. Flexible programming has proven mandatory and goes hand in hand with any so-called "flexible" school.

Typical of an elementary district which builds in small increments is the Kentfield District's Wolfe Grade School, also in California, which departed from its master plan to construct, in lieu of a conventional multiuse building, a structure which completely fulfills the demand for the self-contained classroom and *tôtal* "instant flexibility."

Architects Corlett & Spackman have designed a circular clear-span building that truly runs the gamut that all interior walls are movable and "disappearable," thus providing 1) "instant flexibility," 2) six self-contained classrooms, 3) any combination of classrooms and 4) view of a speaker from any point in the instructional space.

So long as the educational process undergoes change, flexibility of interior space will be essential to a school that functions properly. Certainly the inevitability of a facility becoming outmoded is substantially reduced by the advent of flexibility.

This, then, is an interim report (as is any study that deals with housing for education), and we are derelict if we do not continue to seek better ways of meeting the ever-changing needs of education. ■

PPPA PROFESSIONAL PRACTICE AIDS-1965

New practice aids of immediate usefulness to the architect have been developed by this Commission's five Committees on Office Procedures, Insurance, Specifications, Building Materials & Systems and Building Construction. ■ The only revised or new documents issued under the September 1965 Edition banner, they follow those developed by the committees, recommended by the Committee on Documents Review for the approval of Institute directors and presented in the October 1964 AIA JOURNAL. Committee studies since that presentation resulted in the new aids and documents described in this eight-page section. ■ The Project Manual Concept should be given particular attention. This proposal for contract document organizations, developed to generally conform with the Uniform System for Specification Headings and Data Filing, is perhaps the most significant document proposal since the General Conditions of the Contract and the Owner-Contractor Agreement were placed in separate documents. All AIA documents are being studied for conformance to the Project Manual Concept. ■ Chapter 1 of the AIA Architect's Handbook of Professional Practice, a circular of information on all AIA publications and documents, has been updated to reflect these revisions and additions, and a copy mailed to every corporate member. ■ The Commission welcomes comments on its document studies, which should be addressed to the Director of Professional Practice Programs at AIA Headquarters. DANIEL SCHWARTZMAN, FAIA, *Adviser, Commission on Professional Practice*

G700 Series, Revisions

BY DEAN F. HILFINGER, AIA

The Institute's G700 Series of documents includes the familiar Application for Payment and Certificate for Payment. Both have been revised for the September 1965 Edition.

G702, G702A, Application for Payment—Most construction documents call for the contractor to submit a "Schedule of Values" at the beginning of the project and an "Application for Payment" periodically during the progress of construction. For instance, Article 24 of AIA Document A201, General Conditions of the Contract, requires such submissions. Documents G702 and G702A were developed by the Institute some years ago for use in both instances.

The September 1965 Edition of these documents contain two improvements. First, column C, form-

erly labeled "Contract Amount," has been relabeled "Scheduled Value" in order to parallel the "Schedule of Values" term employed in A201, Article 24. Secondly, a jurat—commonly referred to as a "notarization"—has been added to the forms. The jurat, when properly executed, places the contractor under oath as to the claims he stipulates in the Application for Payment.

G703, Certificate for Payment—This document has for years been a companion to the G702 forms discussed above. It is intended that the two be processed together. They all contain statements to the effect that the contractor certifies "that all items are paid for which previous certificates have been issued and payments received." With the addition of the jurat to G702, it becomes unnecessary for the contractor to certify to such a statement on

both the application (G702) and the certificate (G703) where they are used as companion documents. Where the certificate is used alone, however, the contractor must continue to certify to the statement. Therefore, the following text has been added to G703: *If G702, Application for Payment, or other application forms containing satisfactory evidence of payment for work completed does not accompany this Certificate, the Contractor shall provide the following certification by signing below.* This text is followed by the contractor's certification statement and a jurat similar to that added to the G702's.

Finally, the "Owner's Acceptance" blank, which has been found to be cumbersome and unnecessary to proper processing, has been eliminated since the owner's check in payment of the certificate constitutes sufficient "acceptance."

Project Manual Concept

BY J. C. HEMPHILL JR., AIA ADDENDA (if bound in Project Manual)

The AIA Committees on Specifications, on Office Procedures and on Documents Review have for 18 months worked jointly on a program to clarify the relationship and indexing of all the documents prepared by the architect for detailing, specifying, bidding and constructing a project. This program, initiated by the Committee on Specifications in connection with its work on the Uniform System for Construction Specifications and Data Filing, produced the Project Manual Concept.

The AIA Board adopted this concept in September 1964, instructing the various committees within the Commission on Professional Practice to proceed with the detailing of consequent changes required of all AIA office practice documents. These subsequent changes will, when adopted, result in a September 1966 or 1967 Edition of affected documents.

The Project Manual Concept is, in its simplest terms, a reorganization and renaming of that familiar book of bidding forms and contract documents usually labeled "Specifications" which, along with the drawings, are the documentary basis for all construction projects.

This book of "Specifications" contains a great deal more than its name implies. It normally includes the bidding documents, i.e., invitation, instructions, sample bid and bond and agreement forms, general and supplementary conditions, and information on alternates and unit prices, in addition to the specifications describing the materials and performance expected by the application of construction methods. The book may even contain a schedule of the drawings pertaining to the project. The book is indeed a manual of project bidding requirements and contract documents.

The materials included in the Project Manual fall into two general categories: 1) those describing the requirements for bidding and 2) those that become part of the contract documents upon the signing of the construction contract. Within each of these two categories all of the familiar instructions, forms, etc., are organized below:

Outline of Contents of Project Manual

TITLE PAGE
TABLE OF CONTENTS

1.0 BIDDING REQUIREMENTS

These bidding requirements are bound into the Project Manual with the contract documents for the convenience of the bidders.

1.1 Invitation to Bid

(or advertisement)

- Exact title of project and its location
- Name of owner
- Person to receive bids
- Place for receipt of bids
- Time for receipt of bids
- Type of bid opening
- Short description of project, scope and type of construction
- Type of contract
- Place for examining bidding documents
- Place for obtaining bidding documents
- Time bidding documents available
- Procedure for obtaining bidding documents
- Statement of what bonds will be specified
- Statement on time of completion and liquidated damages

1.2 Instructions to Bidders

- Qualifications of bidders
- Clarification of bidder's questions
- Addendum
- Bid Guarantee requirements (Bid Bond)
- Procedure for execution of bids
- Procedure for submission of bids
- Procedure for withdrawal or modifications of bids
- Procedure for opening of bids
- Conditions for rejection of bids
- Procedure for award of contract
- Return of Bidding Documents
- Other instructions to bidders

1.3 Sample Forms

- Bid
- Bid Bond
- Power-of-Attorney
- Bidder's Qualification Questionnaire
- Performance & Payment Bonds
- Non-Collusion Affidavit
- Certificate of Insurance
- Other sample forms

2.0 CONTRACT DOCUMENTS

2.1 Agreement

2.2 Conditions of The Contract

2.2.1 General Conditions

- AIA Document A201

2.2.2 Supplementary Conditions

- Modifications of General Conditions
- Additions to General Conditions—
 - examination of site
 - labor standards
 - wages and hours
 - insurance requirements
 - unit prices, predetermined
 - payment to the contractor
 - time of completion
 - partial occupancy
 - bonus and penalty clause
 - liquidated damages
 - guarantees and affidavits
 - type of contract (single or separate)
 - substitution of materials
 - other conditions as required

2.3 Schedule of Drawings

2.4 Specifications

1 General Requirements

- Summary of the work
- Schedules and reports
- Samples and shop drawings
- Temporary facilities
- Cleaning up
- Project closeout
- Allowances
- Alternates

2 Site Work

- 3 Concrete
- 4 Masonry
- 5 Metal
- 6 Carpentry
- 7 Weather Protection
- 8 Doors & Windows
- 9 Finishes
- 10 Specialties
- 11 Equipment
- 12 Furnishings
- 13 Special Construction
- 14 Conveying Systems
- 15 Mechanical
- 16 Electrical

The Committee on Specifications is proceeding with initial drafts of an Invitation to Bid and Advertisement, Instructions to Bidders, Bid Form and "how to prepare" commentary that will accompany the forms. As these studies continue, they will be reviewed with other committees under the Commission.

Meanwhile, each of these other committees is preparing new and revised documents that respond to and support the Project Manual Concept.

A Uniform System

BY ROBERT J. COWLING, AIA

The adequate appraisal of new information on construction materials and techniques and its careful correlation with esthetic, functional, legal and budgetary factors are tasks that require an increasing amount of the practicing architect's time. A tool aimed at improving this process of appraisal and correlation is being developed in the form of a uniform system for filing and retrieving product data, and for relating it to a specifications outline and to construction cost accounting.

The basic framework of the Uniform System is a format proposed in March 1963 by the Construction Specifications Institute as a means of developing a more uniform approach to the writing of building specifications. Other organizations quickly approved the concept, and it soon became apparent that the direct relationship between requirements of construction specifications and requirements for the filing of product literature used by the specifications writer made inclusion of a filing system highly desirable.

The AIA recognized this as an opportunity to modernize and broaden the scope of the Standard Filing System, Document E301, by its absorption into a more comprehensive system. Recognition of the similar relationship between specifications and the general contractor's project cost accounting needs led the Associated General Contractors to propose the inclusion of a cost accounting guide.

The concept of a system combining a specifications outline, a filing system and a project cost accounting guide has been the subject of a series of conferences sponsored jointly by AIA and CSI in which 11 organizations from the United States and Canada participated. These organizations are now reviewing the document draft preliminary to publication, tentatively scheduled for February 1966. The Uniform System is to supersede the present Standard Filing System now out of print.

The Specifications Outline

The Specifications Outline, Part 1 of the Uniform System, is or-

ganized into 16 broad subject areas called *divisions*, drawn as to permit ready classification of all specification material under an appropriate division. Recommended division numbers, titles and sequence remain unchanged throughout the system to provide a framework for the orderly arrangement of subordinate material. Experience indicates that use of such a predetermined pattern can be of great aid in writing specifications. The division is not a substitute for the traditional specification section but is an organizational device for grouping those sections. Divisions are not intended to delimit subcontracts or trade jurisdictions.

Sections are specification subdivisions each of which encompasses certain units of closely related work. Each Uniform System division is divided into several sections with recommended titles and in a recommended sequence. Care has been taken to develop the sections in such a way that few will need further division for any but the highly specialized project. The content of each section is based on the premise that it is easier and more precise to combine several exclusive sections under one trade or one subcontract than to divide a more inclusive one among several. The use of sections of reduced scope brings an increased flexibility to the specification writing process, and it will be found that a greater proportion of material can be reused in succeeding specifications.

Section titles and sequence recommended by the Uniform System result from an extensive study of common specification practices throughout the U.S. Deviation from the system is sometimes indicated by unusual project requirements, and in such circumstances it is a simple matter to add the required special sections, or to combine or subdivide standard sections. Deviation from the system should, however, be made judiciously, and care should be taken not to combine dissimilar items in one section.

Projects vary greatly in size and complexity and so do specification requirements. To permit the Specifications Outline to respond more accurately to varying demands, section titles of two types are included.

Narrow-scope titles provide for separate sections on such related but distinct items of work as *demolition*, *building moving* and *clearing & grubbing*. If the project entails work under more than one such section, then separate sections should be prepared, using recommended narrow-scope titles.

If, on the other hand, site clearing operations are limited to work falling clearly under a single section, then the specifications writer may choose to use the broadscope title *clearing of site*. A similar choice might be made between narrow-scope sections on *caissons*; *piling*; *sheeting*; *shoring*, *needling & underpinning*; and the broad-scope section *foundations*.

The Filing System

The Filing System, Part 2 of the Uniform System, provides for product literature and related material to be filed numerically under one of the 16 divisions. Each is composed of certain generic subdivisions, arranged alphabetically and corresponding generally with section titles appearing in Part 1, the Specifications Outline. This allows the user to readily relate the Filing System to the Specification Outline since both are based on the fundamental section-division concept. File numbers for preprinting on product literature will be assigned on a systematic basis in accordance with the Filing System, thus assuring both producer and user of proper and consistent classification.

The filing system is based on the premise that there be only one correct place for each subject to be filed. This premise often is inappropriate in the writing of specifications, for some products must be specified in several divisions. Herein lies a basic difference between the requirements of the Specification Outline and the Filing System. Clearly, a choice of filing classification must be made in such situations. In the Uniform System, the decision has been made by designation of a single classification for each product based on most prevalent use of the product. Cross reference of other locations free of identical catalogs but where the product may be specified, is provided both

in the text and in the Index of Key Words.

The necessity of providing a constant frame of reference for the pre-classification and filing of product literature precludes the retention by the Filing System of the broad flexibility provided by the Specification Outline. However, provision must be made for ready inclusion of new materials and techniques as they develop, and for this reason an alphabetical sequence has been used for the Filing System to provide the needed adaptability without the necessity of revising an established sequence or providing unassigned numbers as would be required with a fixed numerical system.

The Filing System is composed of divisions identical in number, title and sequence to those found in the Specification Outline. Each division is made up of headings that correspond, generally, with the section titles used in Part 1, but here the

sequence is purely alphabetical. A heading entitled "General Information," at the beginning of each division except the first, is the sole exception to this alphabetical order.

The Cost Accounting Guide

The Cost Accounting Guide, Part 3 of the Uniform System, is an orderly arrangement of the items of work required of the contractor during the course of a construction project. It is presented in a format readily applicable to computer processing techniques.

Section titles appearing in the Cost Accounting Guide are, with few exceptions, identical in name and order to those used in the Specification Outline.

No attempt has been made to include in the system any classification of material below the section level. Use of such subordinate material will be the rule rather than the exception in actual practice, but

it is left to the individual to establish subordinate titles as required.

An exhaustive collection of key words referring to the entire Uniform System has been compiled and arranged alphabetically in the Index of Key Words, Part 4 of the Uniform System.

The Table of Contents: Uniform System, shown below on this page, is a list that combines section titles, filing classifications and cost accounting categories most of which are repeated in the Specifications Outline, the Filing System and the Cost Accounting Guide. Initial items in each Division 1 through 14 are filing classifications only, as are the second items in Divisions 1, 5 and 11, and the third items in Divisions 1 and 5. Final items in each Division 2 through 16 are cost accounting categories only. These titles are tentative and narrow-scope section titles are omitted in the interest of brevity.

TABLE OF CONTENTS: UNIFORM SYSTEM

<p>DIVISION 1, GENERAL REQUIREMENTS</p>	<p>DIVISION 7, WEATHER PROTECTION</p>	<p>DIVISION 12, FURNISHINGS</p>
<p>codes & standards planning guides special services summary of the work schedules & reports samples & shop drawings</p>	<p>general information waterproofing dampproofing building insulation shingles & tiles panel roofing membranous roofing</p>	<p>general information artwork blinds & shades cabinets & fixtures</p>
<p>DIVISION 2, SITE WORK</p> <p>general information clearing of site earthwork foundations drainage site utilities</p>	<p>DIVISION 8, DOORS & WINDOWS</p> <p>general information hollow metal frames metal doors wood doors special doors metal windows wood windows</p>	<p>DIVISION 13, SPECIAL CONSTRUCTION</p> <p>general information air curtains audiometric room broadcasting station clean rooms conservatories demountable walls floor systems hyperbaric rooms incinerators industrial chimneys insulated rooms</p>
<p>DIVISION 3, CONCRETE</p> <p>general information forms reinforcing concrete work</p>	<p>DIVISION 9, FINISHES</p> <p>general information lath plaster tile work terrazzo thin stone wood flooring</p>	<p>carpets & mats drapery & curtains furniture alternates</p> <p>integrated ceilings observatories pedestal floors prefabricated buildings radiation protection special roofs spray-on fireproofing storage vaults swimming pools zoo structures alternates</p>
<p>DIVISION 4, MASONRY</p> <p>general information mortar face brick common brick clay tile backing units clay tile facing units concrete masonry units ceramic veneer & terra cotta glass masonry units</p>	<p>DIVISION 10, SPECIALTIES</p> <p>general information chalk & tackboards chutes disappearing stairs finish hardware firefighting devices fireplace equipment flagpoles identifying devices</p>	<p>DIVISION 14, CONVEYING SYSTEMS</p> <p>general information cranes & hoists dumbwaiters elevators lifts</p> <p>materials handling moving stairs & walks pneumatic tubes alternates</p>
<p>DIVISION 5, METALS</p> <p>general information fasteners & supports metals & alloys structural metal open-web joists decking & siding</p>	<p>DIVISION 11, EQUIPMENT</p> <p>general information maintenance material art & craft athletic bank commercial darkroom ecclesiastical educational food service</p>	<p>DIVISION 15, MECHANICAL</p> <p>general information systems plumbing piping & valves supporting devices air distribution heating hydronics refrigeration pumps & compressors</p> <p>controls insulation fire protection waste treatment water supply processing equipment installation completion alternates</p>
<p>DIVISION 6, CARPENTRY</p> <p>general information rough carpentry heavy carpentry glue-laminated wood</p>	<p>DIVISION 16, ELECTRICAL</p> <p>general information systems conduit & raceways conductors switchgear & panels busways wiring materials lighting</p>	<p>communications power supply electrical heating grounding systems motors & controls installation completion alternates</p>

G705, Certificate of Insurance

BY JOHN NELSON LINN, AIA

In specifying insurance for a construction project, it has long been the custom of the architect to require that parties to the construction contract obtain from their insuring companies certificates giving all pertinent data.

Such information includes types and amounts of coverage, effective dates, dates of expiration and assurance that the policies will not be canceled without a specified advance notice to the insureds. Since each insurance company issues its own, the certificates often differ from one another, and it is often difficult to readily understand what is stated in a certificate without a careful analysis of each of the entries. Even then, an obscure notation or exception may escape notice.

The new Document G705, Certificate of Insurance, provides for the simple listing of policy numbers, inception and expiration dates, and for the limits of liability under three general categories: 1) workmen's compensation and employees' liability 2) comprehensive general liability, including bodily injury, personal injury and property damage and 3) comprehensive automobile liability, including bodily injury and property damage.

The form also provides, under column 4, space where the details of any special insurance specified in the contract document may be entered. These columnar tabulations are followed by general questions relating to the policies, covering such details as occurrence basis coverage, hold harmless clauses, hired automobiles, etc.

Finally, G705 requires that in the event of cancellation, the insurer give at least 15 days' notice to the holders of the certificate.

The document is to be executed and signed by an authorized representative of the insuring company. The format of the document makes its use compatible with "window" envelopes. It can be purchased and used in quantity by the insurance companies.

G705, when properly executed, is both a certified listing and a clear-cut, readily understandable inventory of all the insurance coverages provided for the project. Articles 27 and 29 of Document A201, General Conditions of the Contract for the Construction of Buildings, call for certificates of insurance to be filed with the owner, the architect or the contractor, as the case may be.

It is recommended that the architect specify in his supplementary conditions that such certificates provide information stipulated in Document G705. It is also recommended that a copy of G705 be bound into all copies of the contract document prepared and distributed.

Here it is well to reemphasize a caution repeatedly stated by the AIA Committee on Insurance: that while the architect may advise the owner of the need for adequate insurance, *he should not undertake to advise the owner on the specifics of coverages and limits of liability.* The owner's legal and insurance counsel should advise as to such details, and the architect should insert their recommendations into the contract documents.

Having done this, the advantages of a standard form of Certificate of Insurance, such as G705, will become readily evident to the owner and the architect. Its use will soon demonstrate the ease with which the certificate can be analyzed and a determination made that the insurance coverage specified has, or has not, been provided.

Each executed G705 should, of course, be reviewed by the owner's legal or insurance counsel for their approval. An example of G705, shown here, is available from the Institute in quantity. Orders should be directed to the Documents Division at AIA Headquarters.

As a supplement to this G705 commentary, the Committee on Insurance has developed a Checklist on Protection and Owner's Instruction Regarding Insurance.

Owner's Instructions Regarding Insurance

The owner should determine the types and amounts of insurance he will carry and those that the con-

tractor will be required to carry. The architect should request written confirmation of the owner's decisions and include this information in the Supplementary Conditions portion of the Project Manual. To guide the architect in obtaining a clear expression of the owner's decisions, the following set of prototype letter texts is offered. These should be prepared in accordance with the needs of the particular project involved.

Architect's Request to Owner

Your instructions are requested concerning the insurance provisions to be incorporated in the contract documents for the proposed construction project.

The contract specifications will require the *Contractor* to carry certain forms of insurance such as Workmen's Compensation, Public Liability, Property Damage and Automobile Liability. For your convenience Enclosure "A" may be used to instruct us regarding the limits and kinds of coverage which you wish specified.

There are certain other insurance coverages which are usually the responsibility of the *Owner* such as Builder's Risk Fire and Extended Coverage or all Physical Loss; Owner's Contingent Liability Insurance, etc. Your instructions to us in connection with these coverages can be indicated on Enclosure "B."

We suggest you consult your insurance counselor concerning the limits and kinds of insurance that should be provided to insure the project adequately. We will be glad to supply any additional information which he may require. Please advise us as soon as possible in order that we may complete the contract documents.

Owner's Instructions to Architect Regarding Contractor's Insurance

You are hereby instructed to require the following kinds and amounts of insurance in the specifications for the subject project. The contractor, as part of the contract cost, shall provide and maintain insurance as follows, in companies acceptable to the owner.

1) *Workmen's Compensation* as required by all applicable Federal,

The author is chairman of a Study Subcommittee, whose members are Frederic von Grossmann FAIA; George Malcolm White AIA; Victor O. Schinnerer, insurance counselor.

CERTIFICATE OF INSURANCE

This certifies to the addressee shown below that the following described policies, subject to their terms, conditions and exclusions, have been issued to:

NAME OF INSURANCE COMPANY _____
 CITY AND STATE _____ AIA
 G706

NAME AND ADDRESS OF INSURED _____
 COVERING (SHOW PROJECT NAME AND/OR NUMBER AND LOCATION) _____
 Addressee _____
 Date _____

KIND OF INSURANCE	POLICY NUMBER	Inception Date	Expiration Date	LIMITS OF LIABILITY
1. (a) Workmen's Comp. (b) Employers' Liability				Statutory Workmen's Compensation One Accident and Aggregate Disease Each Person — Premises and Operations Each Person — Elevators Each Person — Independent Contractors
2. Comprehensive General Liability				Each Occurrence — Premises — Operations Each Occurrence — Elevators Each Occurrence — Independent Contractors Each Occurrence — Products Including Completed Operations Each Occurrence — Contractual
(a) Bodily Injury Including Personal Injury				Each Occurrence — Products Including Completed Operations Each Occurrence — Premises — Operations Each Occurrence — Elevators Each Occurrence — Independent Contractors Each Occurrence — Products Including Completed Operations Each Occurrence — Contractual
(b) Property Damage				Aggregate — Operations, Protective Products and Contractual Each Person Each Occurrence
3. Comprehensive Automobile Liability (a) Bodily Injury (b) Property Damage				Each Accident

Please answer the following questions:

UNDER GENERAL LIABILITY POLICY OR POLICIES

1. Does Property Damage Liability Insurance shown include coverage for XC and U hazards?	Yes	No
2. Is Occurrence Basis Coverage provided under Property Damage Liability?	_____	_____
3. Is Broad Form Property Damage Coverage provided for this project?	_____	_____
4. Is Personal Injury Coverage included?	_____	_____
5. Is coverage provided for Contractual Liability (Hold Harmless Clause) assumed by insured?	_____	_____

UNDER AUTOMOBILE LIABILITY POLICY OR POLICY

1. Does coverage shown above apply to non-owned and hired automobiles?	_____
2. Is Occurrence Basis Coverage provided under Property Damage Liability?	_____

In the event of cancellation, fifteen (15) days written notice will be given to the party to whom this certificate is addressed.

NAME OF INSURANCE COMPANY _____
 By: _____
 AUTHORIZED REPRESENTATIVE

CERTIFICATE OF INSURANCE
 AIA DOC. G-706 SEPT. 1988 EDITION ONE PAGE
 THE AMERICAN INSTITUTE OF ARCHITECTS PAGE 1
 1735 NEW YORK AVE., WASHINGTON, D. C. 20005

and hired car coverage as well as owned vehicles: \$ _____

BODILY INJURY
 Each Person \$ _____
 Each Occurrence \$ _____

PROPERTY DAMAGE
 Each Occurrence \$ _____

4) Bonds or Other Insurance which we require the Contractor to provide:

KIND	AMOUNT
_____	_____
_____	_____
_____	_____

The Contractor shall furnish the Owner with satisfactory evidence of the required Insurance and/or Bonds with a provision that at least fifteen days prior written notice will be given to the Owner in event of cancellation or material change.

Owner's Instruction to Architect Regarding Owner's Insurance

You are hereby instructed to indicate in the specifications that the Owner will provide the following kinds of insurance for the subject project:

- 1) *Owner's Contingent Liability* (see Article _____ of the General Conditions.)
- 2) *Builder's Risk or All Physical Loss* on the completed value form to the full insurable value of the work in the names of the Owner and all contractors as their interests may appear (see Article _____ of the General Conditions.)
- 3) *Other Insurance* (state kind and amount.)

State, Maritime or other laws including Employers Liability with a limit of at least: \$ _____

2) *Comprehensive General Liability* including Contractual Liability; Contingent Liability; Explosion, Collapse and Underground Drainage; Damage; Occurrence

Basis Bodily Injury; Broad Form Personal Injury; Broad Form Property Damage; and Completed Operations to be kept in force for at least two years after the work has been completed: \$ _____

3) *Comprehensive Automobile Liability* including non-ownership

G706 and G707, Documents on Liens

BY GUSTAVE R. KEANE, AIA & SAMUEL SPENCER

Document A201, General Conditions of the Contract, in its Article 32, specifies: "Neither the final payment nor any part of the retained percentage shall become due until the Contractor, if required, shall deliver to the Owner a complete release of all liens arising out of the Contract, or receipts in full in lieu thereof, and, if required in either case, an affidavit that so far as he has knowledge or information, the release and receipts include all the labor and materials for which a lien could be filed; . . ."

Heretofore, a standard form of

affidavit as required for this article has not been available. The Institute has now developed such a form, Document G706, shown here.

The affidavit, in its text, refers to the above cited article of A201. Further, the affidavit contemplates that the Contractor's Release or Waiver of Liens will be attached to it; that there will also be attached a Consent of Surety to Final Payment; and that finally there will be attached releases or waivers of liens by all subcontractors and suppliers of material and equipment, as well as a listing of these latter releases or waivers.

The provisions and format of releases or waivers of liens are subject to local law, and therefore

the Institute cannot develop a standard form for such releases or waivers which would be universally adaptable. However, the Consent of Surety form can be standardized. Thus, the Institute has developed a companion document to G706 in its new form, G707, Consent of Surety. An example of this form also is reproduced.

The affidavit, G706, has two basic paragraphs. The first certifies that the attached releases or waivers of lien cover all persons having liens arising out of the contract, and the second certifies that the contractor has paid in full, or has otherwise satisfied all obligations under the contract. The second paragraph provides for the state-

ment of certain exceptions. In many contract situations there may be minor adjustments which are still uncompleted at the time of final payment. The provision for exceptions recognizes this practical condition; its execution will therefore be a truthful statement rather than one so broad in coverage as to be, in almost all cases, subject to a certain minor untruthfulness.

The need for the second paragraph may be seen when it is realized there are certain claims for work done or materials supplied under a construction contract which do not give rise to liens under some state laws. For example, a subcontractor of a subcontractor does not have a right of lien in the District of Columbia. Also, there may be certain liabilities for some sales or use taxes, or claims for damages of one kind or another for which the owner or his property might be held responsible, which are not included in the ordinary mechanic's lien laws.

In both paragraphs the certifications are written as definite statements of fact, rather than being to the best of the contractor's "knowledge and belief." This places upon him a duty to find out the facts, and in effect requires the contractor to *know* that the releases cover everybody and that all debts and claims have been paid except as otherwise specified under the "exceptions" blank.

Some may question why the affidavit does not include an indemnification provision with respect to the owner and the architect. The affidavit is not the proper place to include a contractual provision of this kind. Article 32 of A201 presently includes a provision under which the contractor agrees to indemnify the owner against all payments which the latter may have to make in discharging any mechanic's liens.

The General Conditions is the appropriate place for such an indemnification, for here there is no problem with respect to consideration. There would be some doubt regarding the validity of such indemnification provisions in a release because of lack of consideration to support the promise. Also, there may be further question regarding the indemnification of the architect, who is not a party to the main contract or to the release.

Of course, it may also be that in some states the release of liens by the contractor can appropriately include an indemnification pro-

PPA

CONTRACTOR'S AFFIDAVIT OF RELEASE OF LIENS AND PAYMENT OF DEBTS AND CLAIMS

AIA
G706

ARCHITECT'S PROJECT NO: _____ CONTRACTOR: _____
PROJECT: _____ CONTRACT FOR: _____
ADDRESS: _____ CONTRACT DATE: _____
OWNER: _____

State of: _____)
County of: _____) ss

The undersigned hereby certifies that pursuant to the General Conditions of the Contract, Article 32, the releases or waivers of liens attached hereto, cover the Contractor, all Subcontractors, all suppliers of materials and equipment, and all performers of work, labor, or services who have or may have liens against any real or personal property of the Owner arising in any manner out of the performance of the above named Contract.

The undersigned further certifies, except as listed below, that he has paid in full, or has otherwise satisfied obligations, for all materials and equipment provided, and for all work, labor, and services performed and for all known claims for damages arising in any manner in connection with the performance of said contract for which the Owner or his property might in any way be held responsible.

EXCEPTIONS: (if none, write "none"):

SUPPORTING DOCUMENTS ATTACHED HERETO:

1. Contractor's Release or Waiver of Liens.
2. Consent of Surety to Final Payment. Wherever Surety is involved, Consent of Surety is required. AIA Document G707, Consent of Surety, may be used for this purpose. Indicate attachment: _____ (yes _____ no _____)
3. List of separate Releases or Waivers of Liens from all subcontractors and materials and equipment suppliers.
4. Separate Releases or Waivers of Liens listed in Item 3 above.

By:
Title:

Subscribed and sworn to before me this _____ day of _____ 19 _____

Notary Public:

My Commission Expires:

CONSENT OF SURETY COMPANY TO FINAL PAYMENT

AIA
G707

ARCHITECT'S PROJECT NO: _____ CONTRACTOR: _____
PROJECT: _____ CONTRACT FOR: _____
ADDRESS: _____ CONTRACT DATE: _____
OWNER: _____

In accordance with the provisions of the Contract between the Owner and the Contractor as indicated above, the (here insert name and address of Surety Company)

_____, SURETY COMPANY,

on bond of (here insert name and address of Contractor)

_____, CONTRACTOR,

hereby approves of the final payment to the said Contractor, and agrees that final payment to the Contractor of the final estimates shall not relieve the Surety Company of any of its obligations to (here insert name and address of Owner)

_____, OWNER,

as set forth in the said Surety Company's bond.

IN WITNESS WHEREOF,
the said Surety Company has hereunto set its hand this _____ day of _____ 19 _____

Surety Company:

Attest:
(Seal):

Authorized Company
Personnel:

Title:

vision. Such a possibility emphasizes a long-standing AIA policy on the review of Institute documents and forms by local legal counsel.

The AIA forms are the result of painstaking collaborative efforts of architects, legal counsel, contractors and others, guided by long experience, in which the objective has

been fair and equitable contract documents. However, since the laws relative to contracts vary somewhat in the several states, the provisions of the law of the state in which the building is to be erected should be ascertained from local legal counsel.

For general background information on the subject of liens, the

reader may also wish to review the article, "Lien Laws and the Architect," by Richard L. Tully [AIA JOURNAL, July 1964].

Documents G706 and G707 are available from the Institute in quantity. Orders should be directed to the Documents Division at AIA Headquarters.

G708, Architect's Field Order

BY ROBERT J. PIPER, AIA

A principal duty of the architect in his administration of the construction contract is the interpretation of the contract documents. Document A201, General Conditions of the Contract, Articles 3, 38 and 39, speak to this professional responsibility. For instance, Article 38 specifies, in part: "The Architect shall be, in the first instance, the interpreter of the conditions of the Contract and the judge of its performance."

Article 3 specifies that the architect's instructions may be by "means of drawings or otherwise." Usually, the architect's interpretations and instructions are relatively minor in nature, being given in the field through conversation with the contractor or his superintendent.

Important instructions, however, should always be in writing, and if they involve change to the contract, i.e., change in cost or completion time, they must be authorized by a written change order approved by the owner. A change order document has long been available from the Institute in the form of Document G701.

However, a standardized form with which the architect can issue, short of a change order, instructions that interpret the contract document or record minor variations therefrom without change in cost or completion time has not been available. The Institute has now developed such a form, Document G708, Architect's Field Order. An example of this document is shown here.

The document is largely self-explanatory. It is prepared to record and make formal field instructions which are clarifications or interpretations and which do not involve any change in contract sum or completion date. In cases where time is an important factor, the use of this document can be expanded to authorize the contractor to proceed

immediately even though a change in contract sum may be involved. This would require the deletion of the phrase "before proceeding with the work" in the second paragraph.

This should be done only where the architect determines that any delay in the project is to be avoided. The architect should normally reserve only to himself the authority to make such a change in the document, or should designate specifically to his project representative the authority to execute the document in this manner.

Since this new Document G708 is so intimately related to the duties of the architect's project representative, it is suggested that the practitioner again review the details of Document B352, Suggested Instructions to Full-Time Project Representative, noting the architect-project representative relationship which are recommended in that document.

G708 and B352 are available from the Institute in quantity. Orders should be sent to Documents Division at AIA Headquarters.

ARCHITECT'S FIELD ORDER

AIA
G708

DATE OF ORDER:

ARCHITECT'S PROJECT NO.:

PROJECT:

ADDRESS:

OWNER:

CONTRACTOR:

CONTRACT FOR:

CONTRACT DATE:

TO:

CONTRACTOR

You are directed to execute promptly the following order which interprets the Contract Documents or records minor variations therefrom without change in cost or completion time and without prejudice to the Owner's rights under the Contract.

If you consider that change in cost or completion is involved, please submit your proposal to the Architect before proceeding with the work. If the proposal is found to be satisfactory and in proper order, this Field Order will be superseded by a Change Order.

Descriptions: (Here insert a written description of interpretation or variation)

Attachments: (Here insert listing of attached documents that support description)

ARCHITECT:

By:

COMMISSION MEMBERS AND COMMITTEE CHAIRMEN

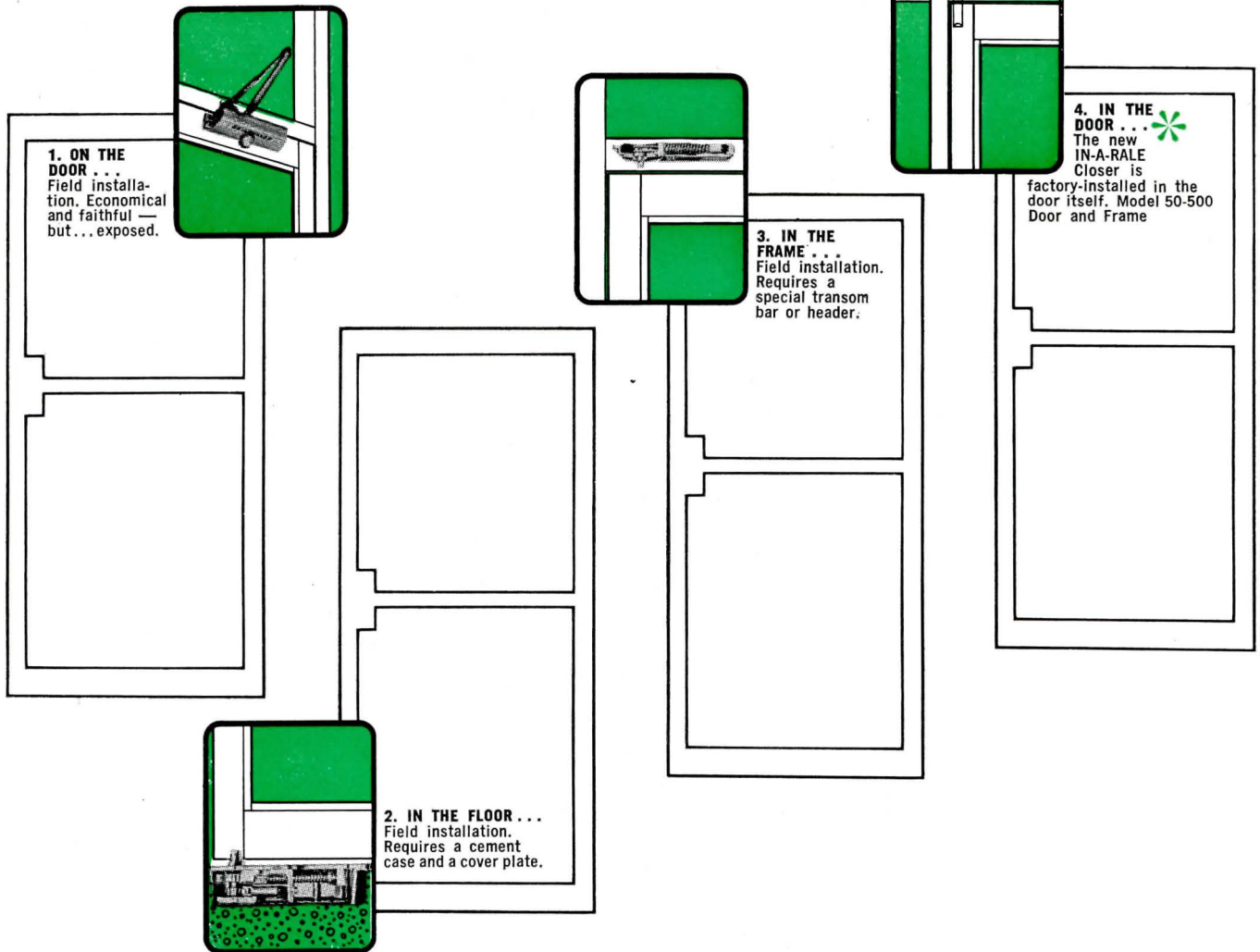
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Counsel: Samuel Spencer, legal; Victor O. Schinnerer, insurance.

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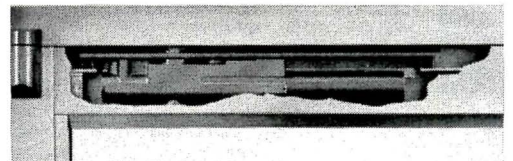


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The War: Campaign in Atlanta

The North Georgia Chapter AIA has been one of the forerunners in the Institute's War on Community Ugliness. Jules Gray AIA highlights the local program in this report.

A trip through Atlanta is tangible evidence that a war on ugliness is in progress. Its urban redevelopment program, now in full swing, was launched in 1959 with three individual projects and the earnest attention of the city's architects.

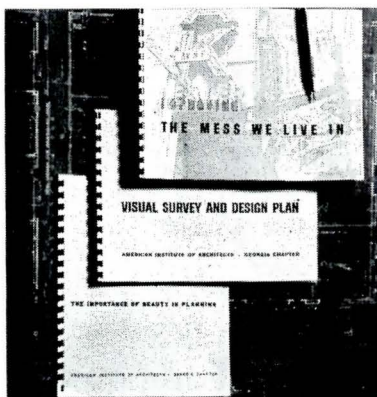
Today, the Atlanta Housing Authority, a central figure in the urban renewal plan and the city's agent for execution of Federally assisted U.R. programs, reports that 11 projects have been approved. These involve the rehabilitation of 2,500 acres. In the first six projects alone, more than \$50 million are being expended, with private developments representing about half of that amount. Tax revenues on the land and improvements completed have increased 4.5 times.

The architects' contributions began in earnest in 1958 when the North Georgia Chapter's urban design committee researched and published a detailed study entitled "The Importance of Beauty in Planning," designed to focus greater public attention on the prevention of ugliness and the promotion of harmony and beauty in Atlanta's appearance.

The report was based on a study made by the joint committee on design control of the New York Chapter AIA and the New York Regional Chapter of the American Institute of Planners. It represented one of the most comprehensive studies on esthetics in city planning undertaken to date.

This was followed in 1960 by a detailed documentary report on Atlanta's problems and avenues to their solutions. "A Visual Survey and Design Plan" not only pinpointed the lack of beauty prevailing in the metropolitan area but provided an implementation program under which the ugliness could be attacked and corrected.

Three years later the architects completed and issued their most detailed study and one which elic-



Through publications and seminars, the North Georgia Chapter has made noteworthy contributions toward improving the cityscape, which boasts a new Major League Stadium (baseball and football) seating 57,000. Architects: Finch, Alexander, Barnes, Rothschild & Paschal in association with Heery & Heery.

ited major public response. Called "Improving the Mess We Live In," the publication climaxed two years of intensive research by the Chapter's urban design committee in collaboration with the local chapters of the AIP and the American Society of Landscape Architects.

The study was publicly unveiled at a luncheon for City of Atlanta officials, leaders in business and industry and the field of design.

"Improving the Mess We Live In" depicted the offensive elements in the city's landscape, appraised the damage, assessed the potential future toll and set forth the solutions. The authors charged with no mincing of words that:

"For the most part, downtown Atlanta is an anachronism—an ugly, archaic and wasteful throw-

back to a time when the city was a small leader in the provincial South rather than the Atlanta of today. . . . The principal failing of downtown is its lack of focus. It meanders in and out, up and down. Elegant shopping areas bleed into cheap warehouse districts, the great buildings of the financial district dribble out toward bleak parking lots and cheap dining stands."

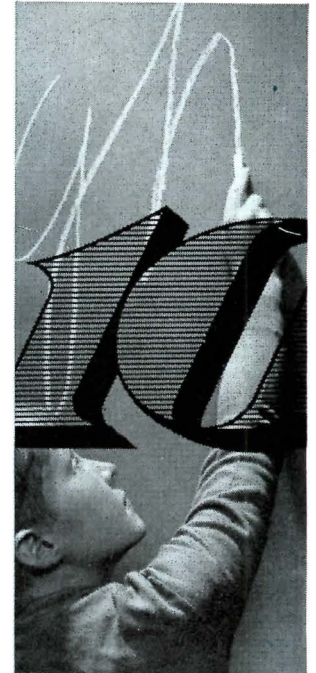
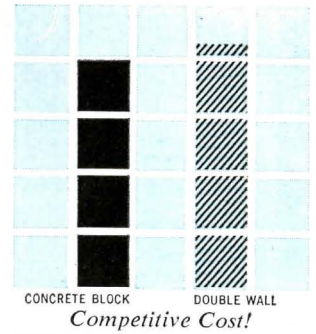
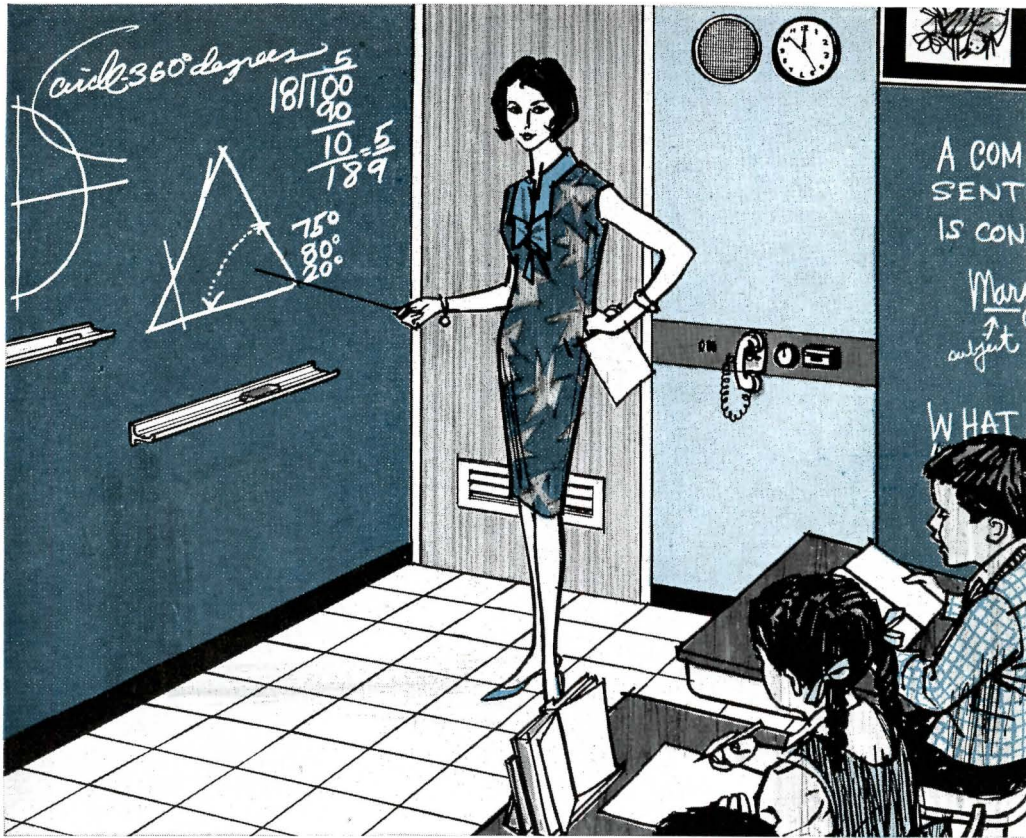
Response to the charges and the plan was swift and definite. The meeting was hardly over when the Petroleum Council ordered copies of the 125-page indicting study, then issued its promise to take steps to improve the image of the service station, described as "the great clutter-upper of the urban scene." The Women's Chamber of Commerce promptly took the lead in a plan to improve a two-block sector of Marietta Street in the heart of the business district—a plan to which the banking institutions quickly offered their support.

The Atlanta Beautification Committee, an advisory group established by the mayor, pledged to help achieve goals outlined in the study. The downtown Courtland Street property owners took almost immediate action in street beautification in their sector. Other organizations soon joined the fray.

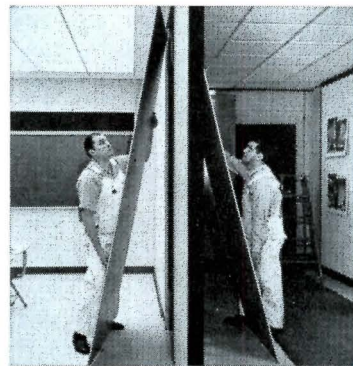
The Institute's South Atlantic director, William E. Freeman, was so impressed with the results that he asked for the development of a joint Urban Design Seminar for the states of North Carolina, South Carolina and Georgia, which was held later that same year, drawing some 300 decision-makers.

All that hard work is reflected today in the city's restless skyline; in the \$18 million Major League Stadium, ready to welcome the Atlanta Braves next spring; in the \$8 million Civic Center Auditorium and Exhibition Hall, now under construction; in the privately financed \$8 million Memorial Cultural Center, to be built on Peachtree Street. Atlanta, too, is seeking to solve its traffic problem with a rapid transit plan approved by the

Cont'd on p. 76



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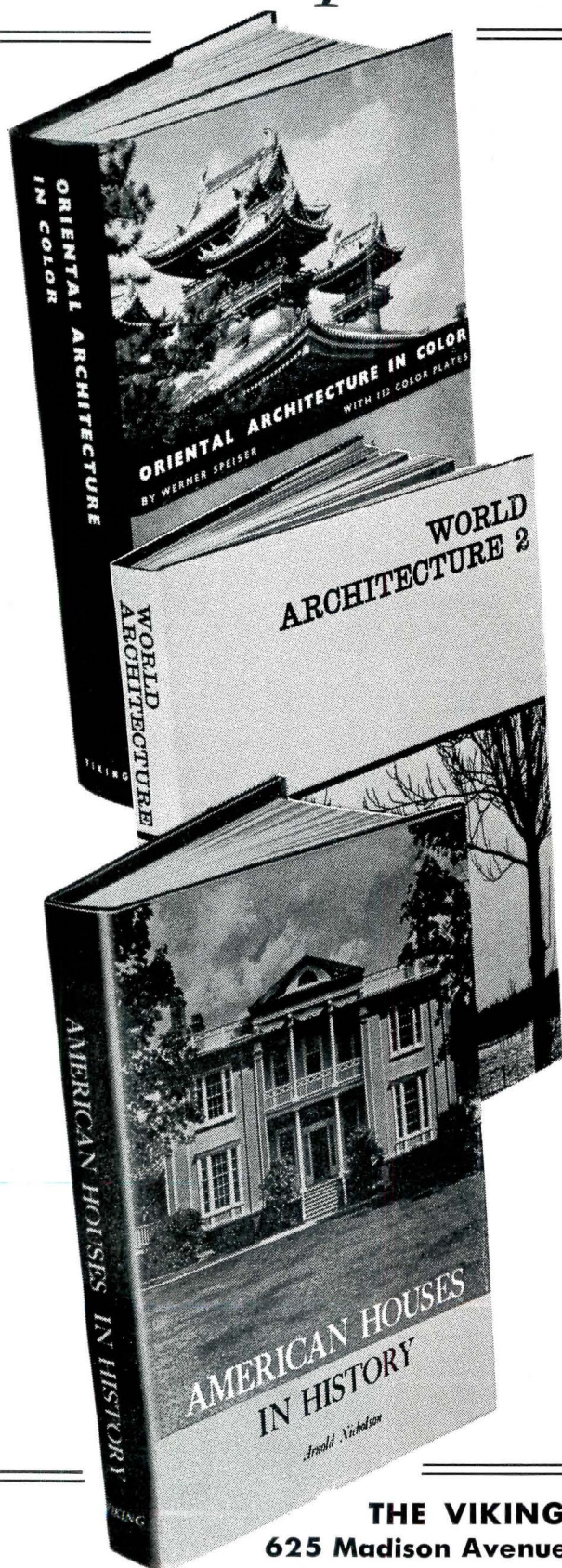
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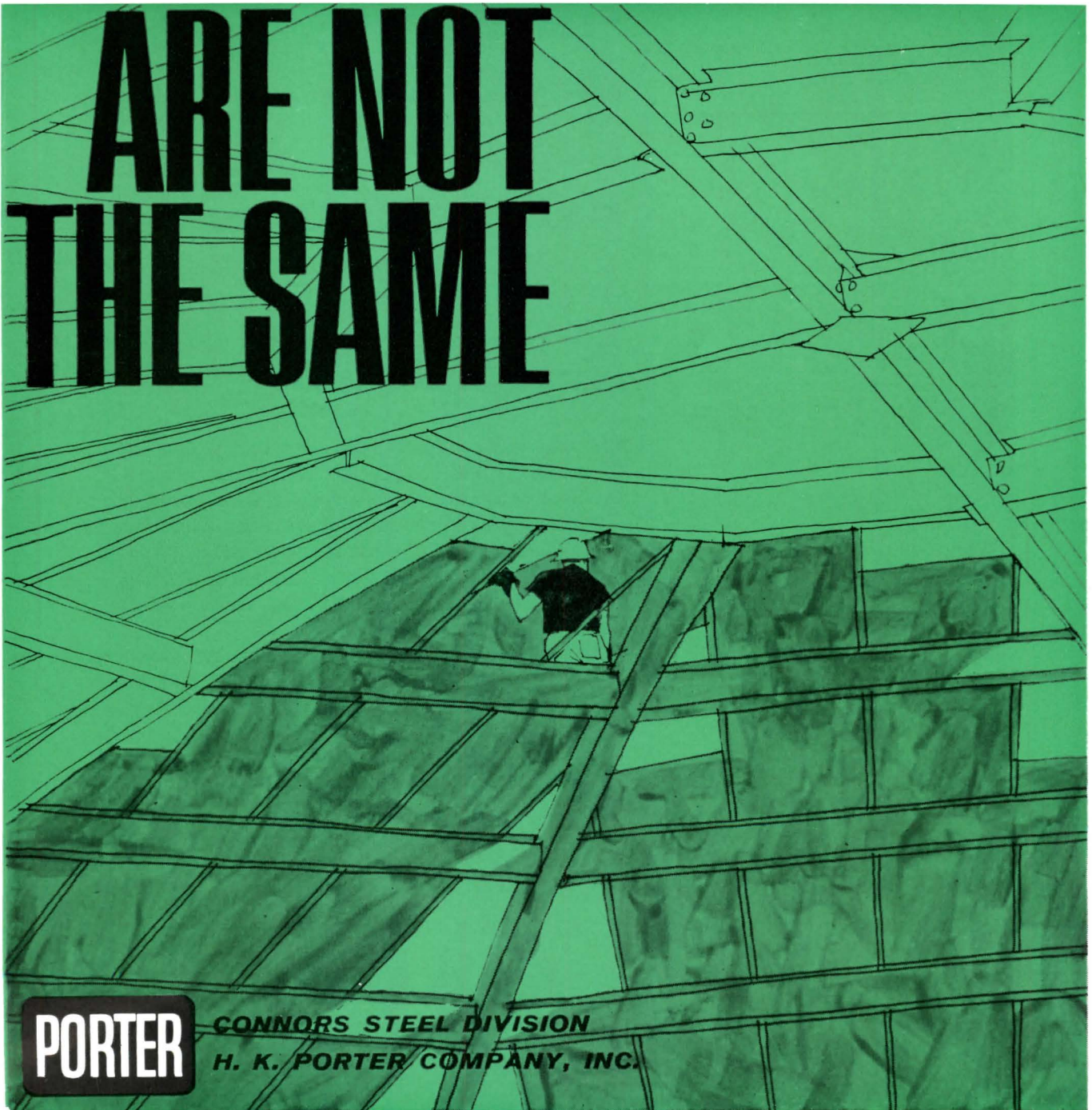
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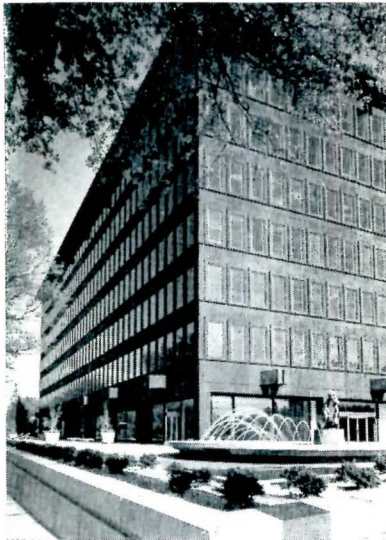
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Atlanta from page 72

voters last fall. The objective is to construct 66 miles of dual track with 42 landscaped, contemporary stations, 17 miles of aerial structures, three miles of subways and seven separate lines reaching into the five-county area surrounding the city and utilizing lightweight stainless steel or aluminum high-speed units on electrified steel rails.

Thanks to the combined efforts of business, civic and city leaders and the continual prodding of architects, Atlanta's campaign to create beauty moves right along. ■



Atlanta's business district is sprinkled with handsome new structures such as this award-winning office building by Toombs, Amisano & Wells. The statue is by Italy's Elbert Weinberg.



Trusco Plaza, with its focal sculpture by George Garner, aims at urban space rather than rustic park, according to architects Abreu & Robeson.

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Building with the Guild

The American Institute of Architects has entered into formal affiliation with a second organization, the Guild for Religious Architecture.

Milton L. Grigg FAIA, a member of the Institute's Committee on Religious Architecture and immediate past president of the Guild, says the action of the AIA Board of Directors "establishes the Guild in a relationship of official record with the Institute."

The AIA, he explained, views the affiliation "as an implementation of the Institute's policy to broaden the base of effective activities and services into collateral fields through affiliation and interchange of kindred concerns with closely related organizations.

"This affiliation reflects the Institute's interest in the broadest sharing of specialized resources with its entire membership," Grigg adds. The Guild joins the Producers' Council as the second affiliate of the AIA.

The Guild was organized in 1940 as the Church Architectural Guild of America but recently changed its name to reflect its interest in all religious architecture.

It was formed by a group of architects, craftsmen and religious leaders, all sharing a concern for the inadequacy of resource material and consequent mediocrity of much of the religious architecture.

"The group's purpose was primarily education: to provide for mutual interchange of experiences and problems and to inform both the layman and the architect of the role and function of a house of worship," Grigg points out.

The Guild, he says, "has served perhaps more than any other agency in raising the standards of religious architecture in the United States."

Starting with a Protestant emphasis, the Guild in an approach initiated some 10 years ago expanded its scope to include the Catholic and Jewish faiths.

Meantime, members of the Institute's Committee on Religious Architecture—many of them Guild members, too—were also key par-

ticipants in the technical resource programs of several faiths as well as of the Guild itself, Grigg explains.

"The groups found themselves carrying out studies, preparing papers and offering varied services through almost precisely parallel channels of communication," according to Grigg. "It thus became apparent that there was both a duplication and a dilution of effort, and that there was need for a broader sharing of these specialized services and studies. Toward this end a formal rapprochement between the Guild and the Institute seemed in order."

Grigg says it was known the AIA could accept as an affiliate an organization already established in its standards for professional membership and committed to ethical principles consistent with the long established standards of the Institute. "Thus," he adds, "there originated in the Committee on Religious Architecture of the Institute, and simultaneously in the Board of the Guild, conversations which led to the present affiliation.

"There will be practical and effective interfaith coordination, inter-

preting the program requirements of all faiths with the architectural profession adopting as resource persons the affiliate members of the Guild, the writers, theologians, ministers, artisans and craftsmen whose Guild membership is held in recognition of significant accomplishments in their respective fields."

The Institute's Committee on Religious Architecture was formed on the recommendation of the late Walter A. Taylor FAIA, who in 1947, as the AIA's director of education and research, set out to prepare a comprehensive bibliography on religious architecture. He was to find uncoordinated sources of information between the various faiths with their varying religious programs and consequently differing physical requirements. The committee over the years has reported the results of its specialized research.

The Guild program, carried out through committees, has "heightened the awareness of both the professional and lay community to the requirements of well-designed churches and temples," Grigg says. "Its service has been uniquely enhanced by a long-standing liaison with the administrative and theological voices of many religious groups."

The Guild has raised standards through its publications, slide collection, lecture personnel, workshops, seminars and its annual national conferences.

The conferences have been high-level, productive events. The theme for the 1966 session is "An End to False Witness," a search for honest meaning and statement in both religious and architectural terms.

That theme was chosen as a stimulus to architects and churchmen toward greater clarity.

Attendance and registration for the conference is open to the public. Institute members seeking membership in the Guild, professional or associate, can obtain applications by writing to the Guild's executive secretary, Mrs. Dorothy S. Adler, 1346 Connecticut Ave. N.W., Washington, D.C. 20036. ■

SAN FRANCISCO IN 1966

Fittingly, in view of the affiliation, two members of the AIA will play leading roles at the 27th National Conference on Religious Architecture in San Francisco, April 26-28.

They are William M. Cooley of Park Ridge, Ill., president of the Guild for Religious Architecture, and Donald Powers Smith of San Francisco, a past president of the Northern California Chapter AIA, conference general chairman.

The conference is sponsored by the Guild, Northern California Chapter and the National Council of Churches of Christ in the USA.

Other Guild officers, all AIA members, are Edward A. Sövik, Northfield, Minn., vice president; Walter J. Wefel Jr., Shaker Heights, Ohio, secretary; and Rollin Wolf, Allentown, Pa., treasurer.

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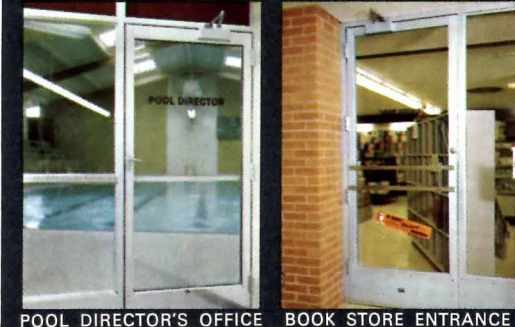
VERSATILITY—the ability to be applied on any door and meet the requirement of the various locations in a school building, places a real test on the completeness of a hardware line. Norton Closers offer versatility in depth, giving you the opportunity to choose the control best suited for the type of use and the overall architectural decor.

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BOOK STORE ENTRANCE



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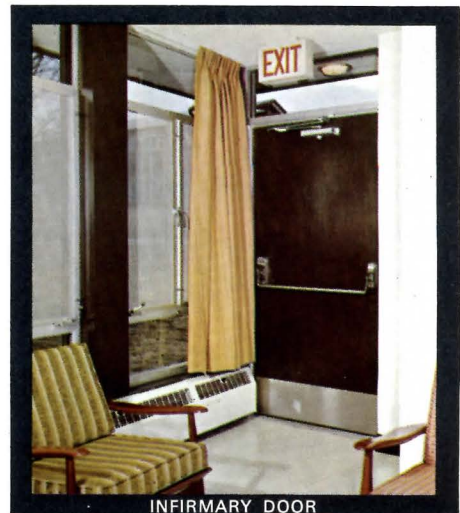
Series 7000 narrow-projection door closers with covers; aluminum covers to match door hardware, wood covers to match door paneling. PRESIDENT'S DINING ROOM a perfect match of closer and door paneling. BOOK STORE a blend with the aluminum door and frame. POOL DIRECTOR'S OFFICE beauty in aluminum closer and cover for an extremely high humidity area. CAFETERIA ENTRANCE a match between door closer cover and the other door hardware for a dramatic contrast with the dark finish of the door.



PATIO ENTRANCE

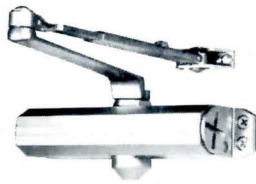
STAIRWELL ENTRANCE

Series 1600 Tri-Style Closers with narrow, clean lines to compliment modern doors. Available in invisible mounting, back mounting and exposed mounting. PATIO ENTRANCE invisible top-jamb mounting with screws concealed. Closer body does not project past narrow top frame. STAIRWELL ENTRANCE exposed mounting with parallel arm for an attractive installation for even out-of-the-way places.



INFIRMARY DOOR

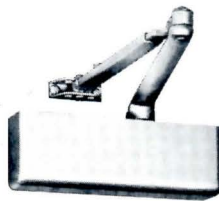
Series 6100 Uni-Trol door control, a combination door holder and door closer. Simplified installation yet complete control for doors. INFIRMARY DOOR an attractive installation and an open door during busy hours.



GYMNASIUM ENTRANCE doors with Norton Series 1600 Closers top-jamb mounted. These closers could have been installed just as easily regular arm or parallel arm.

**SERIES 1600
TRI-STYLE
DOOR CLOSERS**

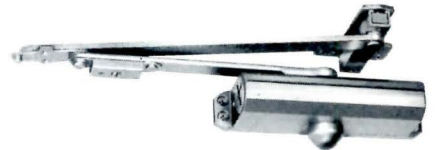
Norton Series 1600 Closers offer a phenomenal degree of versatility. These closers are available in three distinct mounting methods: invisible mounting, no screws visible; back mounting, only four bolts visible on the back side of the door; exposed mounting, shown above. In addition, Series 1600 Closers come as standard for regular, parallel arm, or top-jamb mounting. You get clean distinct styling that can be applied in any location.



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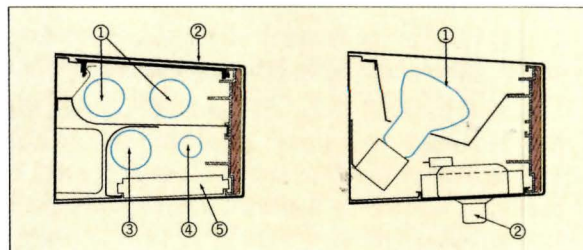
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Octagon Observer from page 18

tion of membership deadline for nonpayment of dues.

By action of the 97th Convention, membership will be terminated instead of suspended as was the practice in the past.

Raymond L. Gaio, Institute director of state and chapter affairs, suggested in a memorandum to chapter and state officers that members in arrears be given reasonable time to make payment and that the membership of those who fail to respond be terminated. National policy becomes fully implemented December 31.

The chapters were asked to notify their membership so that the number of terminations be held as low as possible.

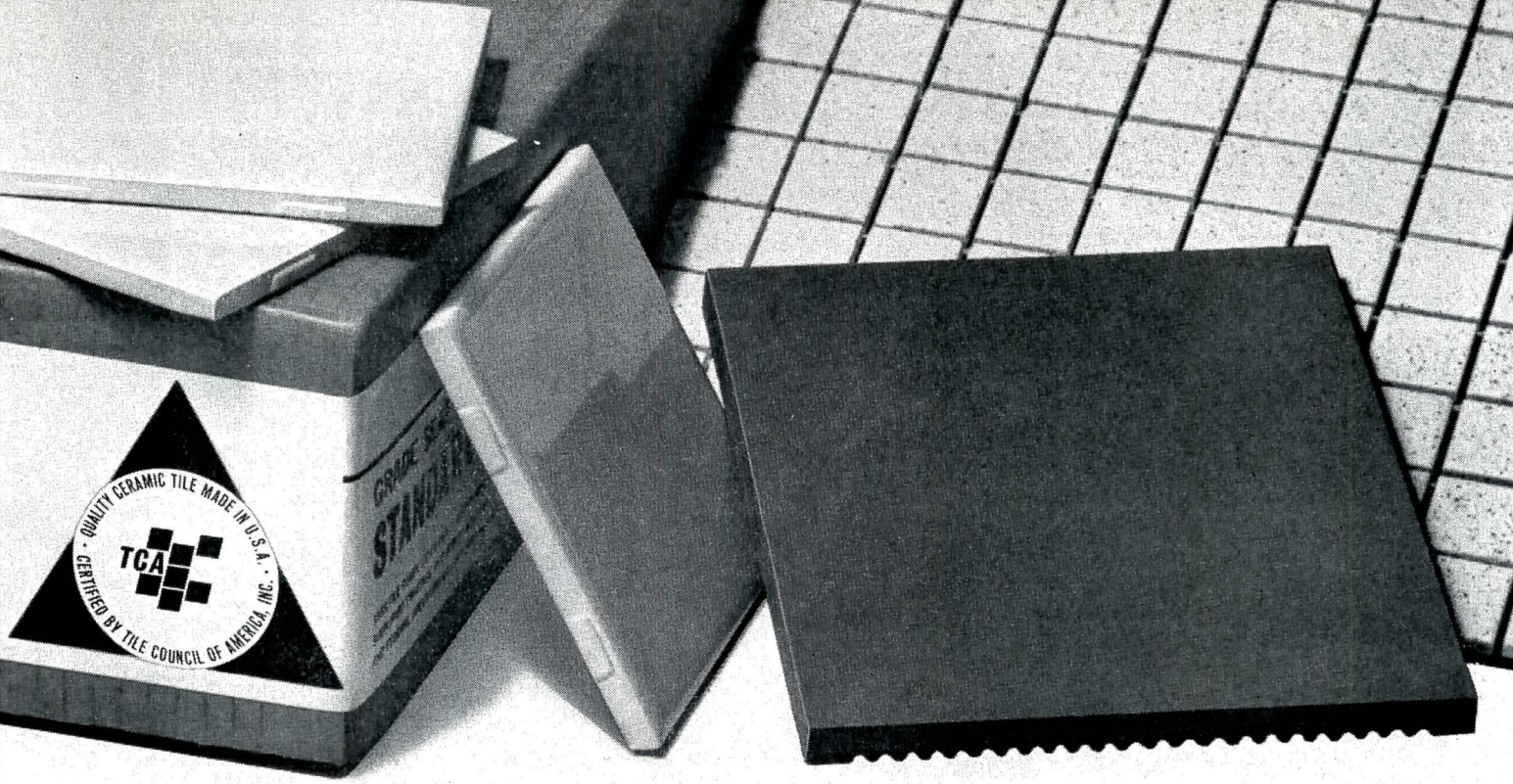
Those whose membership is in jeopardy received a final 1965 Institute billing November 1. The registered mail notice told of their impending termination 60 days hence and a return receipt was requested. It was the seventh billing.

AIR-RIGHTS STUDY: A \$1500 research grant has been made by the California Council AIA to probe the complexities of future use of air rights over and under the state's highway system. The recipient is Shlomo Angel, student at the University of California.

Continued on page 86

NECROLOGY

- ALBAN, W. L.
St. Paul, Minn.
CANNON, WILL A.
Niagara Falls, N.Y.
DELEHANTY, J. BRADLEY
New York, N.Y.
DURAN, RICHARD
Lubbock, Tex.
FLETCHER, JEAN BODMAN
Cambridge, Mass.
FORREST, HARRY G.
Concord, N.H.
JACOBY, ERICH
Brockton, Mass.
JELINEK, ROBERT
Fort Worth, Tex.
LEDERER, NORMAN
Charlotte, N.C.
PERIERA, PERCIVAL R.
Midland, Mich.
SENER, LEON B.
Tulsa, Okla.



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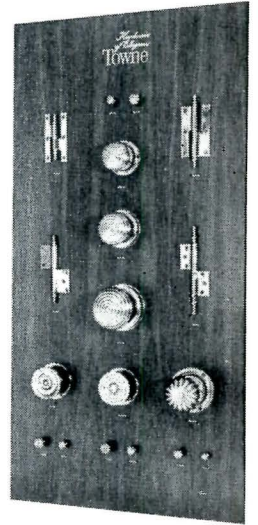
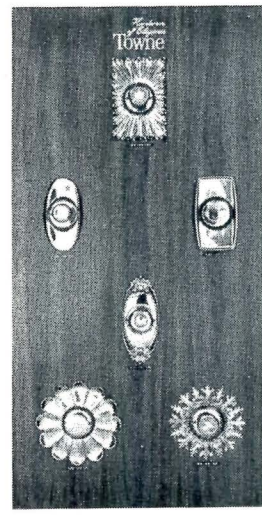
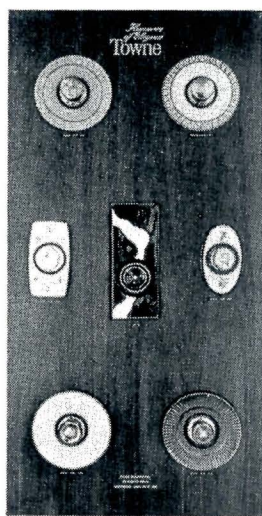
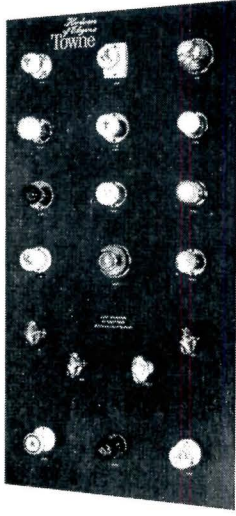
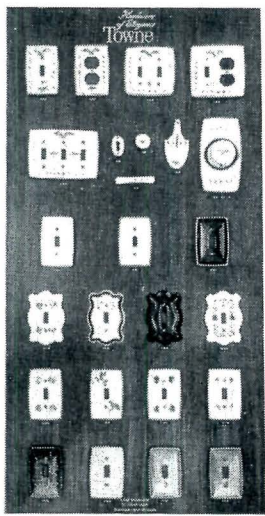
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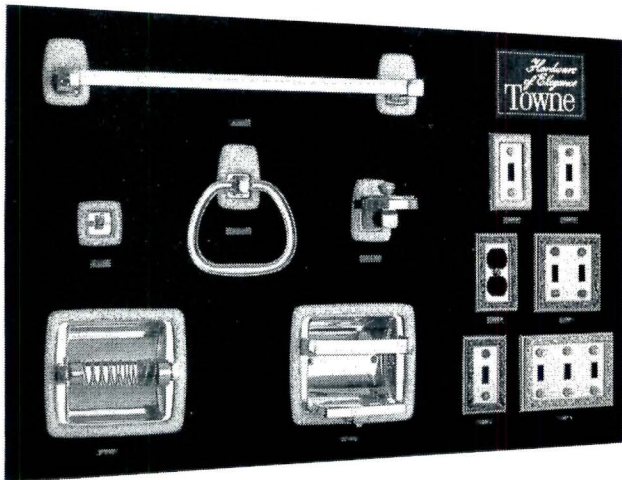
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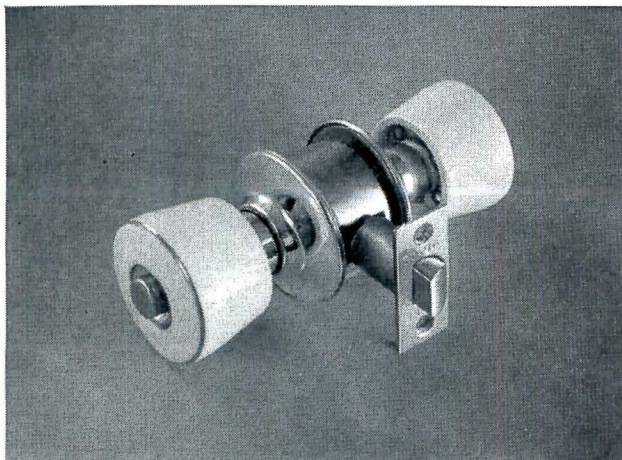
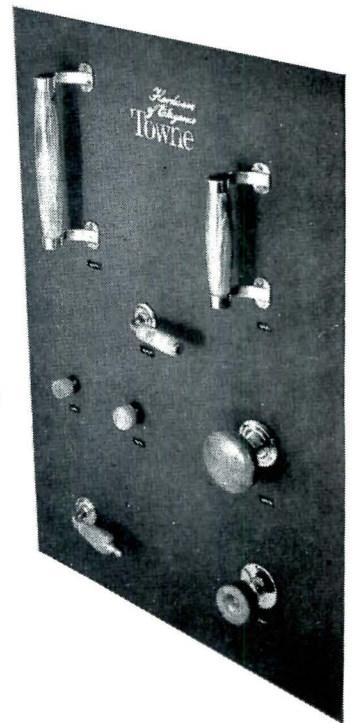
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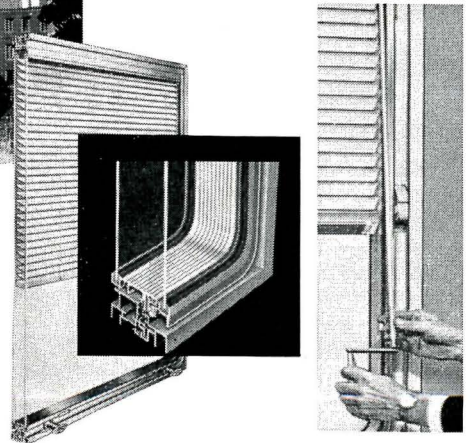
The Laurence G. Payson House, staff residence for New York Hospital—Cornell Medical Center uses the proven advantages of dual glazed Amelco windows with *Flexalum* venetian blinds **BETWEEN** the panes of glass.

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FELLOWSHIPS / When in Rome

The American Academy in Rome is currently accepting, until December 31, applications for a limited number of fellowships in architecture and other art forms for subjects connected with post-classical Rome (A.D. 300-1800), and for which source materials are primarily available in Rome.

The Academy also is offering a new fellowship in environmental design sponsored by the Foundation for Environmental Design, with the possibility of renewal.

The \$3650 fellowships are open to U.S. citizens for one year beginning October 1, 1966. Also provided are free residence, studio or study, library and other facilities at the Academy. Requests for additional details should be addressed to the Executive Secretary, American Academy in Rome, 101 Park Ave., New York, N.Y. 10017.

ABOVE CAYUGA'S WATERS: A new fellowship program in city planning and urban renewal will be initiated in the summer of 1966 by Cornell University's College of Architecture under a \$200,000 grant from the Mellon Charitable Trusts of Pittsburgh. To be spread over a period of four years, half of this sum will be allocated toward fellowships, while the other half will go for faculty salaries in the program.

BAUHAUS REVISITED: The Institute of International Education has awarded the first publications grant of the Kaufmann International Design Awards to Jane F. McCullough, writer, editor and former assistant curator of architecture and design at the Museum of Modern Art, for the preparation of a book "Walter Gropius, the Bauhaus and Basic Design Education."

The study comes at a time when the tenets of a new architecture set forth in those manifestoes of the 1920's are rapidly falling into silent disrepute. Though not sufficiently detached chronologically nor ideologically from the movement, the reevaluation of the Bauhaus by one of its leading exponents may contribute to a future definitive work.

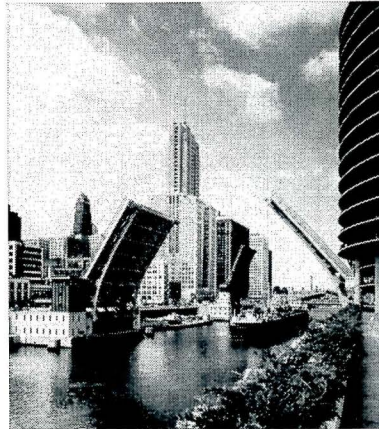
(Note: Mrs. McCullough would welcome correspondence from anyone with information on either his-

torical or contemporary aspects of the subject. Address: Box 31, North Bennington, Vt.)

AWARDS / Crossing One's Bridge

Few structures are as important economically to a city as its bridges—and the American Institute of Steel Construction has been carrying on its own campaign to promote better design, whether in an urban or rural setting.

"The current quality of bridge design is very good," said the jury



Tops in Its Category: Chicago's North Dearborn Street Bridge, in the eyes of the jurors, "solves the difficult problem of the bascule bridge in a very simple manner," integrating the abutments with the trusswork. Designer: Department of Public Works; consultant: A. J. Boynton & Co.

for the most recent competition. But they added that in many instances "the main part of the bridge often ends abruptly before the road has reached land again. The extremities are thinly or lightly done and don't seem to integrate as a total design."

FILMS / Star Is Concrete

A new film series on the use of concrete in American architecture from 1844 to the present has been released by the Portland Cement Association. In four parts with sound and color, it is entitled "Twelve Decades of Concrete in American Architecture." The 74-minute long series is available on a free-loan basis in the U.S. and Canada from PCA's district offices or from its headquarters at 33 W. Grand Ave., Chicago, Ill.

The first two reels cover the experimental phase of the new material as well as the pioneering efforts

of the so-called "international style." Part 3 deals with recent design and fabrication techniques, while a 24-minute presentation of works in concrete by 11 contemporary architects is the subject of the concluding reel.

SEMINAR / South of the Border

Next year's Mexican Architecture and Interior Design Seminar-Tours, held in cooperation with the Sociedad Arquitectos Mexicanos, will offer the choice of a winter or an autumn trip to four cities.

The two-week study jaunts will begin on February 13 and October 9, convening in Mexico City instead of San Antonio as in the past. Inquiries to T. H. Hewitt, Apartado Postal 5-251, Mexico 5, DF.

EXPOSITION / Canada in '67

Every fair seems to acquire a conversation piece long before it opens, and Canada already has hers: a complex of apartment units plugged into steel-framed hillsides.

Conceived by a 25-year-old architect, Moshe Safdie, this new approach to high-density housing will be built at an estimated cost of



Manmade Hillside: Prefabricated boxes, each 17 by 38 feet and weighing between 70 and 90 tons, will jut out at various angles so that each living unit receives its share of sunlight. Rooftops will serve as terraced gardens and children's play areas.

\$11.5 million for the 1967 World Exposition to be held in Montreal. The Canadian Government will construct Phase 1 of the controversial project on McKay Pier, rising from the St. Lawrence banks.

Continued on page 90

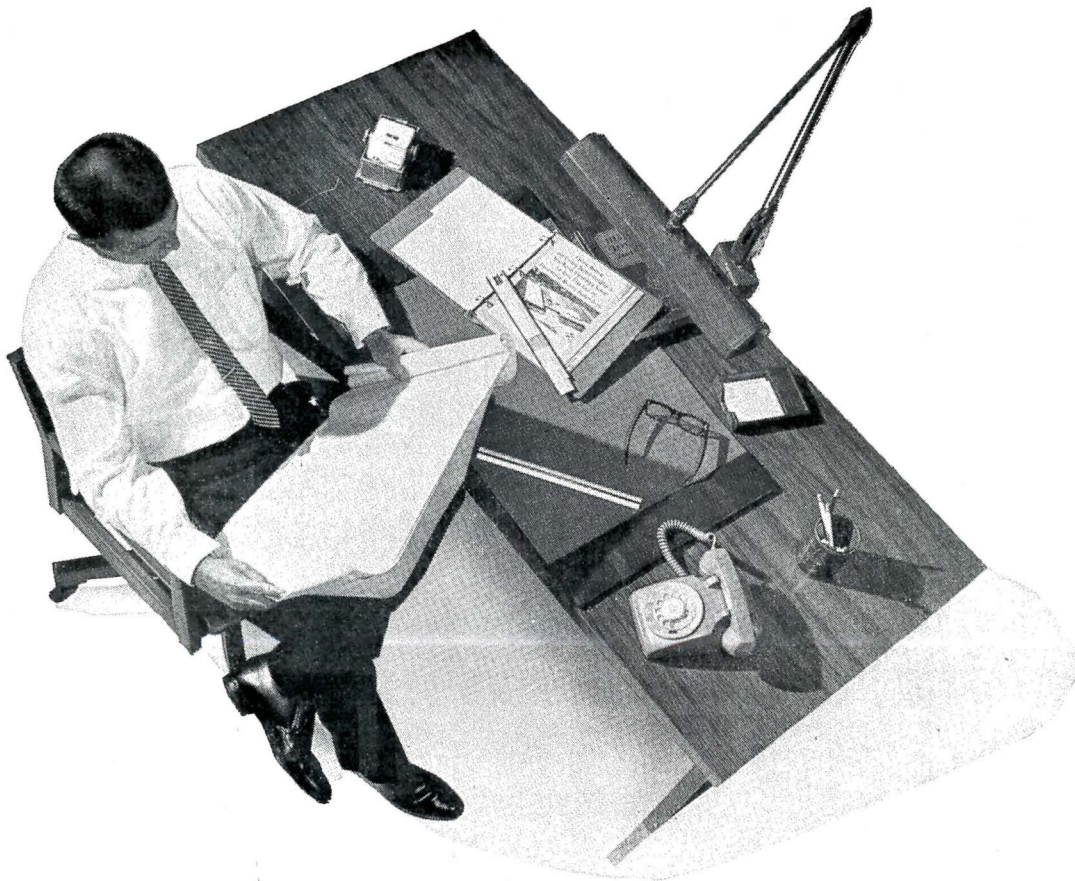
You've made the move to electric heat. Good choice.

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Electric heat is an electrical function and should be installed by a qualified electrical contractor. That way, you've got the one man who can see the job through from plans to permit to operating guarantee.

How can you be sure a qualified electrical contractor will install your next electric heating system? That's easy.

Put the heating specs into the electrical section of your building plan.



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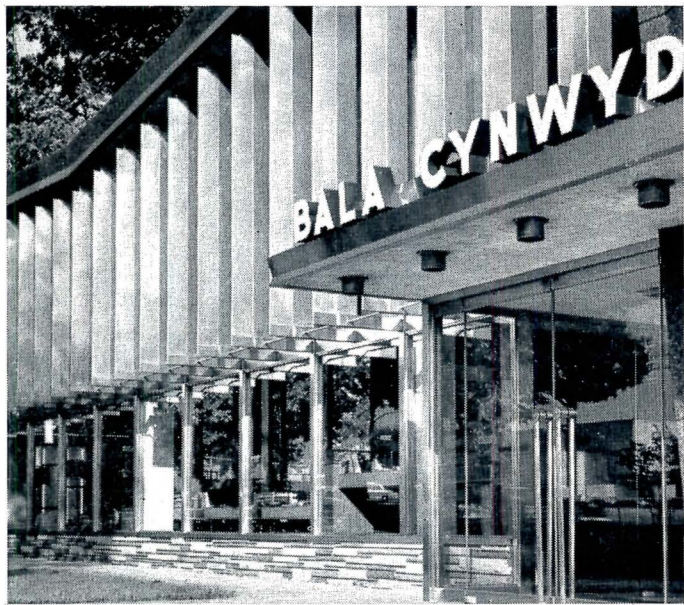
NATIONAL ELECTRICAL CONTRACTORS ASSOCIATION, 610 Ring Building, Washington, D.C. 20036



**With the
excellence of
stainless steel
can fit every budget.**



**These versatile curtain wall
systems combine elegance with
the economy of pre-engineered
components.**



Striking structural effects are possible with standardized components. Here, the addition of deep-louvered, stainless steel sunshades serve both function and appearance and become an integral part of the total exterior effect. Cayuga Federal Savings and Loan Association, Philadelphia, Pa. Architect: Philip Mastrin, AIA, Philadelphia, Pa. Stainless steel "Type 82-X" curtain wall: Pittco Architectural Metals, Pittsburgh Plate Glass Co., Pittsburgh, Pa.

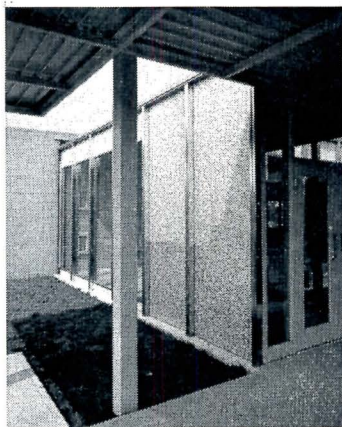
Now you can give your buildings the beauty and prestige of nickel stainless steel curtain walls and still stay within your budget. Modern production methods, such as high-speed roll forming of components, help keep costs competitive with other materials. They enable you to use standard curtain wall components and assembly techniques by adapting them to your own design variations.

Stainless steel has many design advantages. There's no danger of corrosion products streaking or staining adjacent materials. Stainless is corrosion resistant in virtually all atmospheres and climates. The high strength of stainless permits uses of lighter, more economical gauges than usually needed with other architectural metals. Allows large glass areas where desired. The soft, permanent luster of stainless steel complements, reflects and highlights surrounding materials, too. Doesn't overwhelm or intrude on other design or color elements.

Curtain walls of nickel stainless steel cost less to maintain than any other kind. Savings that accrue from the low cost of maintaining stainless can often make up any difference in cost between components of stainless and other materials.

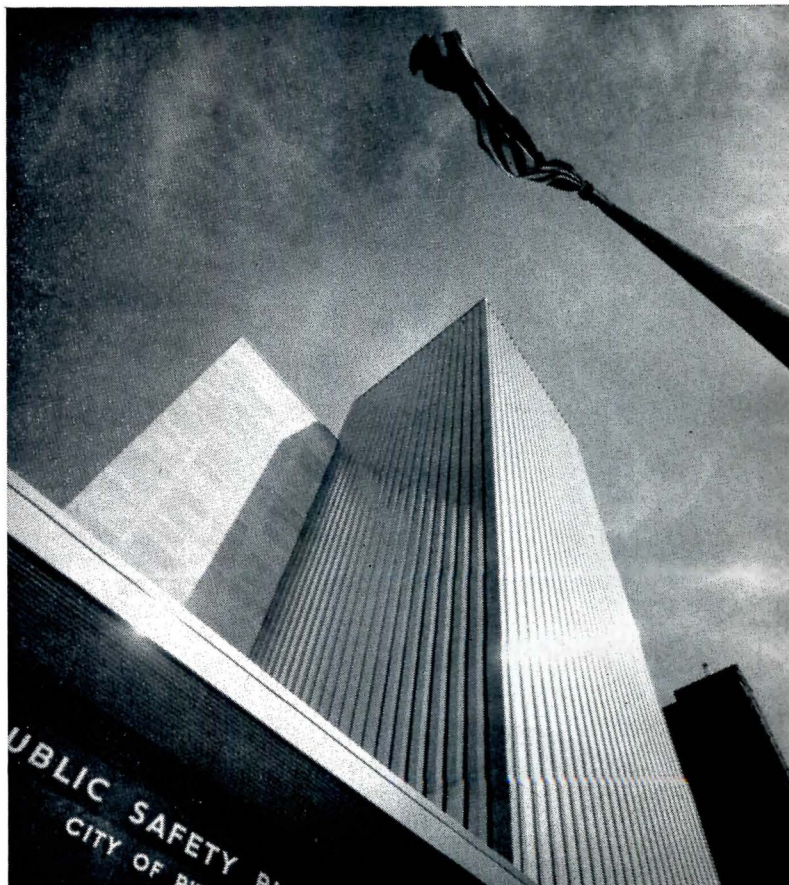
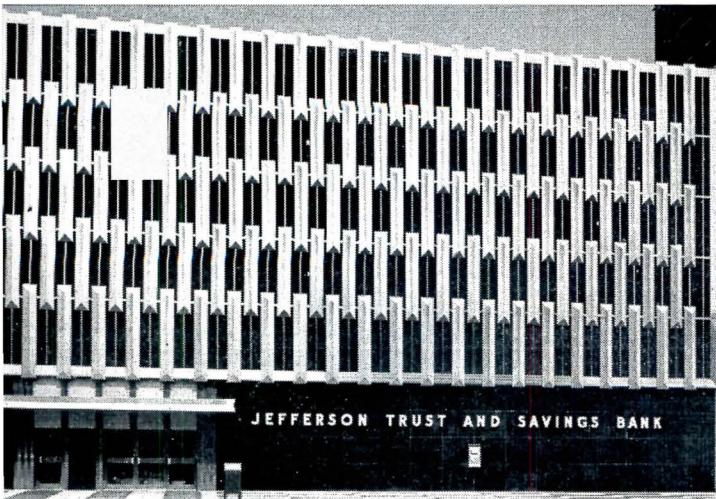
For your next design, consider the advantages of nickel stainless steel curtain walls—as well as doors, windows, hardware, fascia and railings. And write for Inco's informative "Suggested Guide Specifications for Stainless Steel Curtain Walls." Their format follows AIA Specification Worksheets.

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Nickel... its contribution is Quality



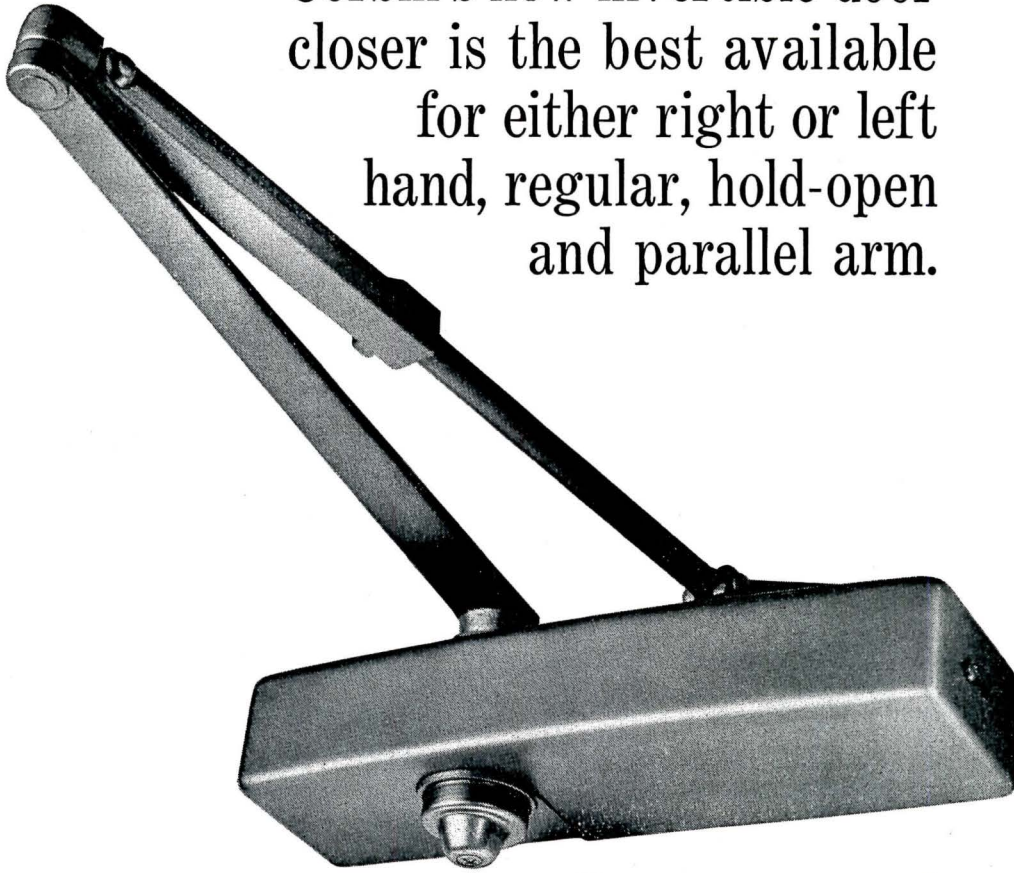
Stainless steel mullion covers, windows and pebble-textured panels combine to form a unit panel type of curtain wall of unusual flexibility for low-rise structures. Merritt Industrial Park Building No. 2, Fishkill, N. Y. Architect: Louis Battaglia, AIA, Fishkill, N. Y. Stainless steel "Series 100" curtain wall: American Bridge Div. of United States Steel Corp., Pittsburgh, Pa.

A light stainless steel clad facing grid supports a decorative pattern of stainless steel panels on this remodeled bank. A background screen of black porcelainized expanded metal hides the old surface and adds deep dimension. Jefferson Trust and Savings Bank, Peoria, Ill. Architect: Lankton, Ziegele & Terry, Peoria, Ill. Stainless steel "Fenmark" curtain wall: Fenestra Incorporated, Lima, Ohio.



In this modernization effort, a 30-year-old structure was stripped to the columns and four stories added. A new utility tower, entirely sheathed in stainless steel, dominates the building and adds an important note of contrast. Public Safety Building, City of Pittsburgh. Architect: Alfred M. Marks, Pittsburgh, Pa. Stainless Steel "Versatile Wall" curtain wall: H. H. Robertson Co., Pittsburgh, Pa. and Connersville, Ind.

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for either right or left
hand, regular, hold-open
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Octagon Observer from page 86

PRESERVATION/National Trust Honors Peterson

Charles E. Peterson FAIA of Philadelphia has received the sixth Louise du Pont Crowninshield Award of the National Trust for Historic Preservation.

Peterson was selected for "his many past and continuing contributions to the preservation of our national heritage and for perpetuating this evidence of America's past greatness as an inspiration for its future." The award consists of a sculptured testimonial, citation and \$1000 stipend.

While the award acknowledged Peterson's national efforts, he is also active on the international scene, having headed a U.S. delegation this summer to the first International Council on Monuments and Sites meeting in Poland. In addition, he represented the AIA, the Society of Architectural Historians and Columbia University. The delegation included Carl Feiss FAIA of Washington, D.C., and Richard H. Howland of the Smithsonian Institution.



At Cracow's Wawel Castle: Presiding at the first assembly of ICOMOS is Vice President Charles E. Peterson. He is flanked by Vladimir Ivanov, director, Kremlin Museum; Ruth de Coronel, Department of Architecture, Mexico; and Lord Euston, Society for the Protection of Ancient Buildings, Great Britain.

ICOMOS, which was inaugurated in Venice in May 1964, developed its formal structure at the Warsaw meeting, attended by 125 delegates from 25 countries. Paris was selected as the permanent headquarters.

Peterson's particular objective at the Polish sessions was to promote an international investigation of the current measures being undertaken for the training and qualification of architect-restorationists, the findings to be studied for the guidance of U.S. educators. As a result, an ICOMOS committee for this purpose was authorized.

Prior to going to Warsaw, Peterson attended a meeting of restoration architects in Brussels.

WHERE PATRICK HENRY SAID IT: A \$1 million nationwide fund-raising drive to restore and repair St. John's Church in Richmond, where Patrick Henry made the stirring plea for liberty or death, is in progress.

The architect for the restoration is James Scott Rawlings AIA. Contributions should be mailed to the Foundation, c/o Trust Department of the Bank of Virginia, 800 E. Main St., Richmond, Va. 23214.

Erratum: The item on page 88 of the October AIA JOURNAL, referring to a statement issued by the Philadelphia Chapter AIA, inadvertently included the Federal Courthouse and Office Building, a different project on a different site. The Chapter's statement was concerned with *only* a proposed 57-story private office tower.



L-M STYLEKINGS lighting the Grant Park Rose Gardens at beautiful Buckingham Fountain, Chicago, Illinois

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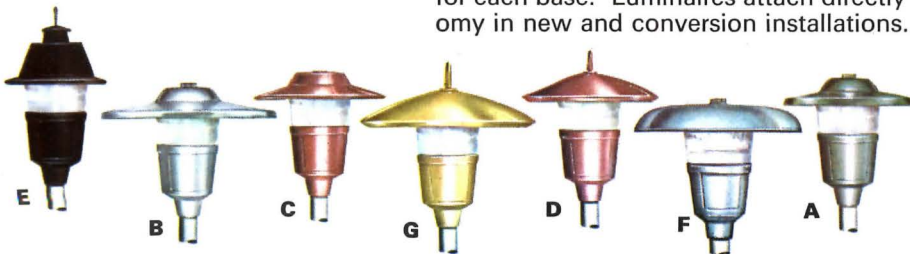
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Utilizes lamps rated through 250 watts mercury or 620 watts (10,000 lumens) incandescent; constant-wattage, high-reactance, or constant-current ballasts; IES Types I, I-1 way, II, II-4 way, III, IV and V distributions; 3-inch and 7-inch mounting fitters; photocontrol accommodation for Styles A, B, C, and F units.

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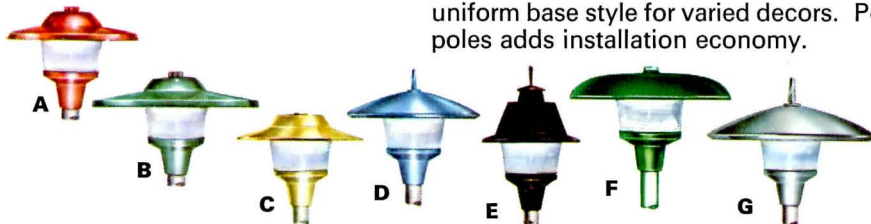
TURN PAGE 

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Wall Mounted

SPECIFICATION

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SPECIFICATION

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Superior lighting performance combined with efficient, modern appearance. Designed for 1 1/4-inch or 2-inch supports. Furnished with aluminum finish. Provides installation economy with one-piece lower housing, internal ballast and leveling assembly.

SPECIFICATION

Available for use with 100-, 175-, 250-, or 400-watt mercury lamps; internally mounted constant-wattage, high-reactance, reactor or constant-current ballasts; IES Types II, II-4 way, and III distributions; built-in photocontrol receptacle.

FOR COMPLETE INFORMATION on Line Material's line of outdoor lighting contact your L-M Distributor or write Line Material Industries, Milwaukee, Wisc. 53201.

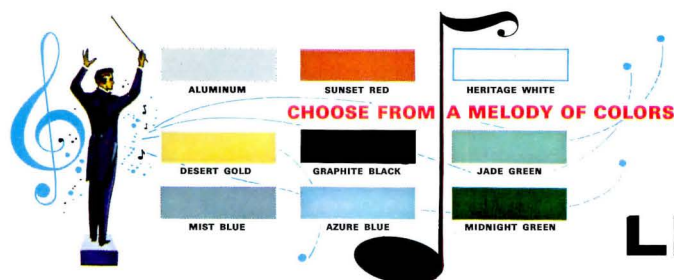
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Contemporary styling combined with application flexibility. Available in a choice of 9 decorative colors. For mounting on 3" O.D. pipe.



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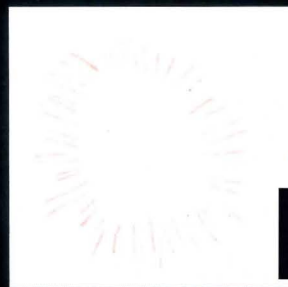
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RESEARCH PROJECTS

University of Detroit

"Development of Corkscrew Foundations for Lightweight Buildings": Investigation of stability and load capacity of corkscrew foundations placed in the earth by power machinery under load of lightweight buildings, and eventual development of such foundations in glass. A. Bruno Leon, John Loss, Jerzy Staniszkis. Sponsor, University of Detroit Research Institute. Budget, \$500. Begun, 1964; completion, anticipated 1965. No reports so far.

University of Illinois

"Eastwick New House Study": Study of row house and block design possibilities. George A. Hinds and David A. Wallace AIA; Wright, Andrade & Amenta. Sponsor, Redevelopment Authority of the City of Philadelphia. Budget, \$60,000 (estimated). Begun, 1955; completed, 1957. Reports, "Eastwick New House Study," published by sponsor.

Iowa State University

"Slab-on-Grade Construction": Study of new techniques of site development, including soil compaction and stabilization, subsurface drainage and moisture control, which have made possible the era of slab-on-grade—to determine temperature gradients and heat losses beneath and around a floor slab laid without frost walls in Iowa. Arthur E. Burton.

University of California

"An Annotated Bibliography on Urban Aesthetics": About 500 annotated entries in field of urban aesthetics, classified in 11 sections. Sami Hassid, Stephen W. Jacobs. Sponsors, Northern California Chapter AIA and Research Committee, Department of Architecture, University of California. Budget, \$200. Begun, 1959; completed, 1960. Report, "An Annotated Bibliography on Urban Aesthetics," 1960.

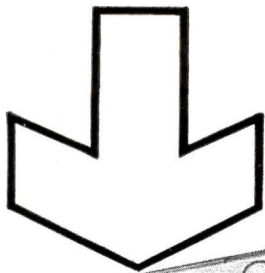
Kansas State University

"Kansas State University Educational and Recreational Facilities on Turtle Creek Reservoir": Study of requirements for a university-sponsored facility. Donald D. White, Darrell Powers, Tom Rowland, Doris Geraghty, Schwab and Eaton, engineers. Sponsor, Kansas State Union. Budget, \$4242. Begun, 1961; completed, 1962. Report, "Lake Union Study-Project 2305," Kansas State Engineering Experiment Station.

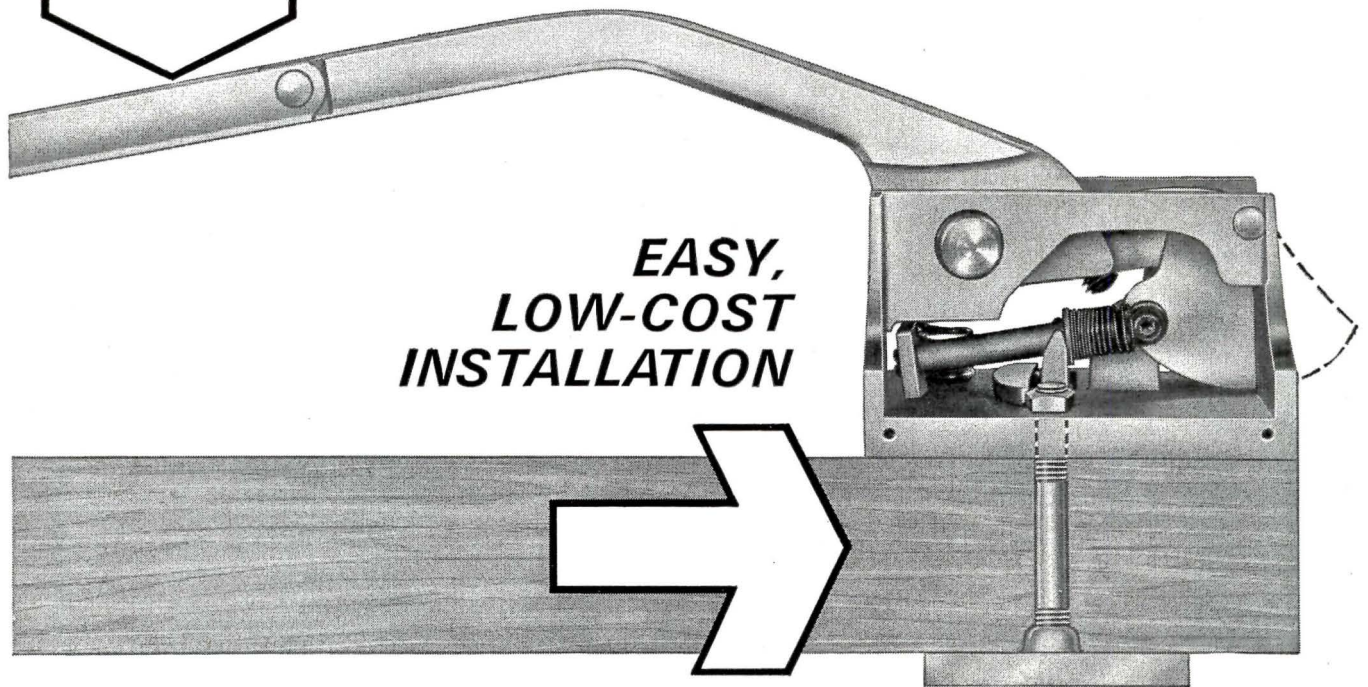
University of Kansas

"Design, Construction and Testing of a Hard-board Hyperbolic Paraboloid—the Triboloid": William B. Duncan, Willard Strode. Sponsor, Masonite Corp. Begun, 1962; testing completed. Report, in progress. ■

As reported in the 1965 AIA Research Survey; additional projects in subsequent issues of the AIA JOURNAL.

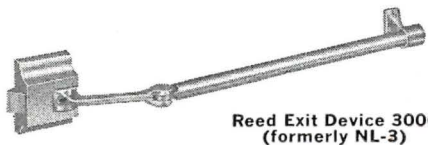


**SAFE,
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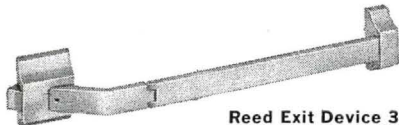


**EASY,
LOW-COST
INSTALLATION**

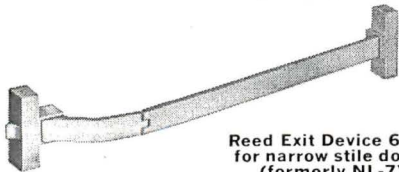
with the design simplicity of **REED UNIVERSAL EXIT DEVICES**



Reed Exit Device 3000
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Reed Exit Device 6050
for narrow stile doors
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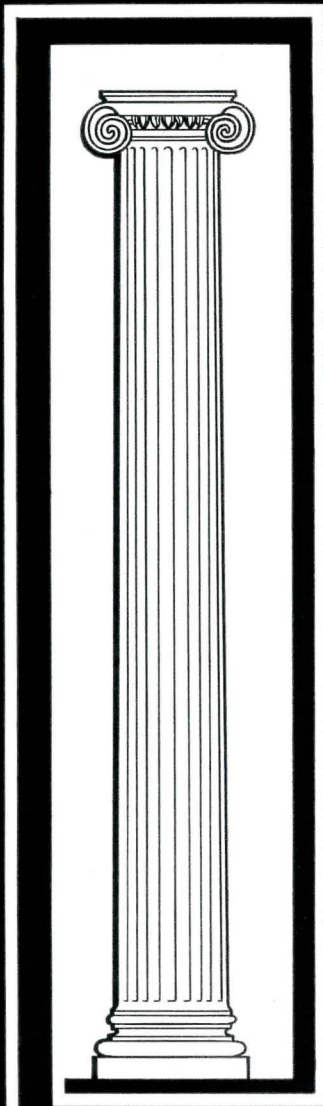
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LETTERS

Fume Hoods Applauded

EDITOR:

I want to compliment the authors of the fume hoods article [July] on an excellent treatise concerning a subject about which little is known by the design profession—even by those who specialize in science laboratory planning. I think they are too modest when they state that the article should be considered a primer and not as a guide to design criteria.

The article serves very well as the latter; it is up to the manufacturers and ventilating engineers to pursue the details further, but it gives us architects the much needed insight into the principles and, based on it, the qualifications to judge whether the design criteria followed “by others” and the final testing procedures before acceptance will lead to a successful installation.

After all, in this age of ever-increasing complexities and myriad of building components, all the architect-administrator can hope for is to acquire sufficient basic knowledge in each component field (be they chemical compounds, elevators, sewage disposal systems or roofing materials) to judge whether the work done by his consultants will lead to success.

GUSTAVE R. KEANE, AIA
New York, N.Y.

Convention Afterthoughts

EDITOR:

Lewis Mumford’s “New World Promise” in the August issue is the most encouraging and purposeful statement of directions and objectives for city building to appear in recent memory.

His humanity towers over the mass of planning platitudes of today with a beacon-like clarity. He will, of course, be subject to accusations of being visionary and impractical, of failing to recognize today’s technology, of not accepting the automobile and all the other pressures of a crass and speculative society.

Never in history has there been a more urgent need for prophets—we should all hope that Mumford’s

vision can be used widely as the measure for the immense and cataclysmic reshaping that is coming about in American cities today.

IBSEN A. NELSEN, AIA
Seattle, Wash.

EDITOR:

North American architects displayed a complete inability to address themselves to the subject of the convention, “Cities of the New World.”

The contrast between the Pan American workshops and the main convention panels was appalling. The majority of South American architects and a very few North American architects were actually discussing aspects of planning, while at the panels there were no discussions and little, with the exception of O’Neil Ford’s interesting talk, that even remotely concerned itself with cities.

The “name” architects in this country are not able to comprehend more than one building at one time.

CHARLES W. QUINLAN, AIA
Albuquerque, N.M.

EDITOR:

The few days I spent in Washington will remain in my memory as one of the best times of my life.

I have had several awards in Italy and from other countries, but the AIA Honorary Membership is preferred.

All AIA members who come here will be welcome and, owing to my connections with museums and galleries, I can arrange for them to see what tourists generally do not see.

BRUNO BEARZI
Florence, Italy

Schools and Sites

EDITOR:

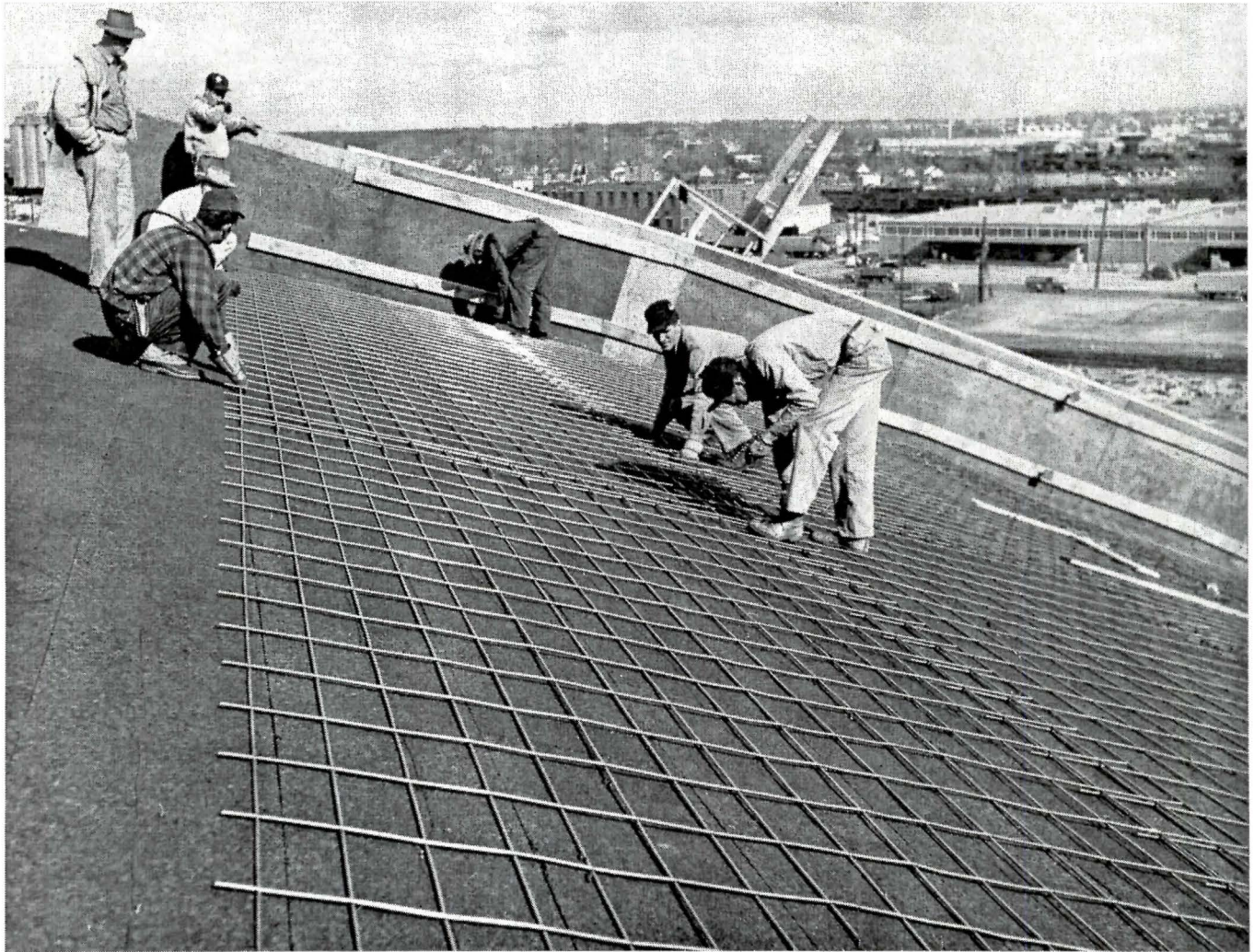
The article by William Chase in the March JOURNAL demonstrates a remarkable understanding of the importance of site selection and utilization in the education facility.

We wonder at the omission of any mention of the planner or landscape architect. Mr. Chase does emphasize that “The services of a competent architect or engineer are valuable in determining the potential of a proposed site and are well worth the additional expense.”

DONALD G. BRAUER
Engineer
Edina, Minn.



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D-221

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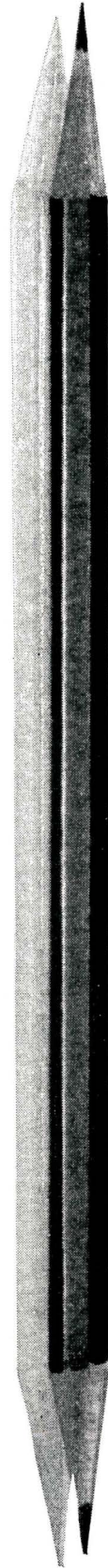
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The college contribution



is a two-
way street

There are two ways to look at it.

There's the contribution the colleges make to business.

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In the other direction, there's the contribution business makes to colleges.

The colleges welcome it. They need all the funds they can get. They're helping to prepare leaders for management, but the cost of education is going up.

In fact many colleges are having to turn away applicants—100,000 a year, says one estimate.

If business wants college talent, it must keep colleges in business. It can help finance their need for classrooms, facilities and especially teachers.

In this light, your aid-to-education program is an aid to your company.

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"How to Aid Education—and Yourself"
Box 36, Times Square Station
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College is Business' Best Friend

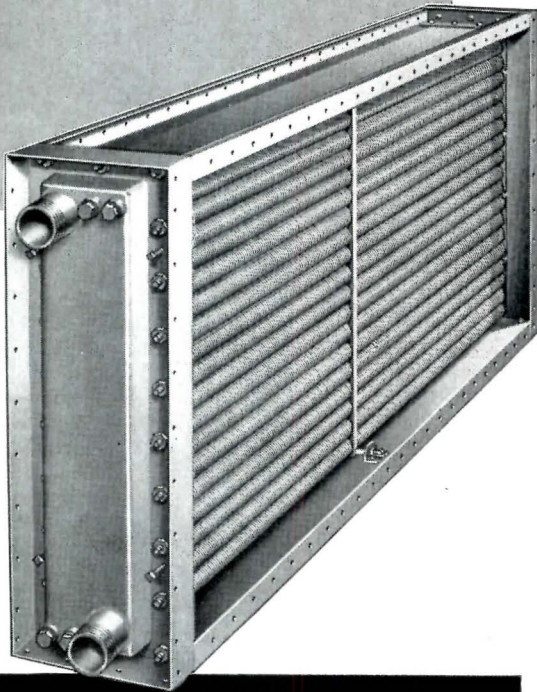


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Editorial Index

AIA JOURNAL

January-December 1965

Volumes XLIII-XLIV

This year's Index, which will *not* be bound in a regular issue, will feature subject, author and title classifications.

In addition to the center-of-the-book general articles, the Index will include the Association of Collegiate Schools of Architecture section (three installments) and such departments as Octagon Observer, Comment & Opinion, Unfinished Business and Books.

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